

American Fruit Grower

FEBRUARY · 1954



He won't bite

into your

fruit profits



If you use dieldrin

officially recommended for plum curculio control

Last year, news of dieldrin's success against plum curculio and "catfacing" insects really got around. It is now established that dieldrin is your best bet against these fruit pests. And grasshoppers, too, which are present in orchards at time of application, are controlled by dieldrin.

Just follow the dieldrin spray schedule recommended by your

state. Dieldrin's killing power remains long periods, affording adult control during the days of greatest curculio activity. This prevents egg laying which damages the quality of fruit.

Dieldrin is available under many trade names as a wettable powder or emulsible concentrate. Only 4 ozs. of actual dieldrin make 100 gallons

of spray formulation. Dieldrin can be used in any conventional orchard sprayer, and is compatible with fungicides and insecticides commonly used in spray schedules.

Ask your local insecticide dealer for a dieldrin formulation. It's your No. 1 insecticide for long-lasting, economical control. Don't let curculio put the bite on you!

SHELL CHEMICAL CORPORATION

AGRICULTURAL CHEMICALS DIVISION
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The Cat^{*} Diesel Tractor is *one* tractor that you can really keep busy, in every season, reports the Ludwig Farms, Milford, Pa. Shown here pulling a big, tractor-power spray. "Live" power take-off keeps 32 HP driving the spray, whether rig is moving or stationary.

"BUSIEST TRACTOR ON THE PLACE"

reports Rudolph Ludwig

MILFORD, PA.



Light jobs like this are handled by the D2 for *less cost* than small gasoline tractors... burns considerably less than a gallon of 12¢ to 15¢ diesel fuel per hour. The Ludwig Farms has wheel-type gasoline tractors, which it seldom uses except for cultivation and light, speedy hauling.



7550 pounds of pull for the heavy jobs... nearly twice as much as an ordinary orchard tractor of similar horsepower. This means you've power and traction to pull bigger hitches, work deeper, climb steep hills, work in mud, sand, etc. Your Caterpillar Dealer will gladly prove all this to you in your orchard!



Ludwig Farms finds that the light-treading Cat D2 Tractor keeps ground in better shape... doesn't pack the soil like wheel tractors. Spreads its weight over more than 10 square feet of ground; wheel tractor concentrates weight on approximately 2 square feet.

Caterpillar Tractor Co., Peoria, Ill., U.S.A.

DIESEL ORCHARD TRACTORS • TOOL BARS • IMPLEMENTS

CATERPILLAR^{*}

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I have _____ acres of land in addition.

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The only fungicide that highest quality

CRAG Fruit Fungicide 341

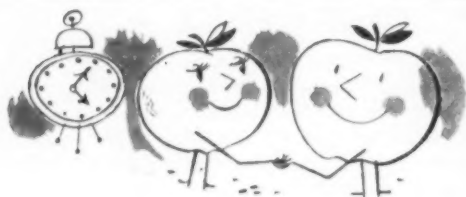
Trade-Mark

CRAG Fruit Fungicide 341 is a *proven* fungicide — the same formulation has been used by growers for the past five years. It has helped them produce more profitable crops of better quality fruit at a lower cost per bushel — and it can do the same for you!

HERE'S WHAT **CRAG 341** GIVES YOU:



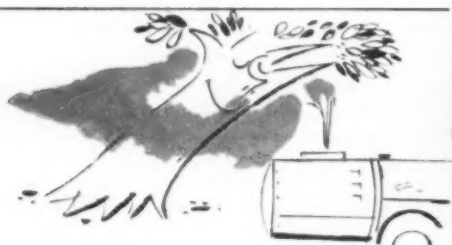
1 Outstanding control of apple scab — Even under the worst conditions CRAG 341 effectively protects against apple scab. CRAG 341 is also useful for the control of summer diseases.



2 Flexibility — In the early sprays, when timing is critical, use a combination of CRAG 341 and a liquid phenyl mercury fungicide — each at half dosage — for a wider range in spray timing and greater safety.

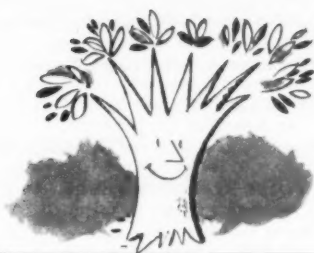


3 Suppression of European red mites — When used in a complete spray program, growers find that CRAG 341 often prevents mite populations from increasing to serious proportions. This saves the cost of special sprays for mite control and simplifies the spray program.

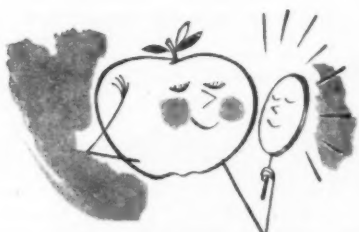


4 Convenience — CRAG 341 is a liquid fungicide and ideal for dilute or concentrate spraying — it is easy to measure and gives you less bulk in the spray tank — it is pleasant to handle and safe to apply.

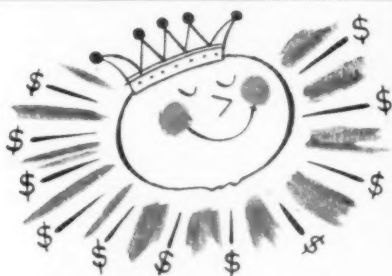
gives you the fruit at the lowest cost



Higher yields—When you spray your trees with CRAG 341, you get vigorous dark-green foliage—larger and more fruit buds—excellent scab control—red mite suppression. This all adds up to healthier trees that produce greater yields.



Better quality fruit — CRAG 341 is a *mild* fungicide. Apples develop naturally into high-colored fruit with a fine finish.



Economical—A bigger and better crop at lower cost means more money in your pocket.

Many leading growers have switched to CRAG 341

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Cherry Growers

Have you tried CRAG 341 for sour cherries? It combines economy and effective leaf spot control.

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Trade-Mark
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FEBRUARY
VOL. 74

1954
No. 2

CONTENTS

Cover photo of lemons is by Gladys Diesing. With the tremendous increase in popularity of frozen concentrate for lemonade, sales of which soared from 200,000 cases four years ago to about seven million in 1953, the entire 1953 lemon crop was utilized for the first time.

Letters to the Editor.....	9
Looking Ahead in Orchard Insect Control.....	15
By B. A. Porter	
Concentrate Spraying Comes of Age.....	16
By Arthur E. Mitchell	
Concentrates Cut Costs.....	18
By J. Marshall	
Fighting Apple Scab with Concentrate Sprays.....	19
By M. T. Hilborn	
Aphids... Vampire Plant Killers.....	20
By Howard Baker	
Spring Frost Forecast.....	22
By Irving P. Krick	
Compatibility Chart for Insecticides and Fungicides.....	24
A Year's Review of Diseases and Their Control.....	26
By John C. Dunegan	
State News.....	27
Fruit Pest Handbook.....	27
The Question Box.....	30
Grow Peaches Up North?.....	31
By Charles L. Stratton	
Lemon Growers Prosper.....	34
Spray Thinning Apples.....	36
By D. D. Hemphill	
Keep Your Eye on Pesticide Legislation.....	40
By Lea S. Hitchner	
Check List of Newer Organic Pesticides.....	42
Calendar of Coming Events.....	50
The Orchard Home.....	56
Editorial Page.....	62

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Publisher

Editorial Staff
R. T. MEISTER H. B. TUKEY
E. K. GOULD ELDON S. BANTA
M. A. FRAZIER
Art Director GEORGE M. ROSS
Washington Correspondent LARSTON D. FARRAR
Advertising Manager
EDWARD L. MEISTER

BRANCH OFFICES AND REPRESENTATIVES
NEW YORK, Martin-Snow Co., Suite C904, 270 Park Ave.
Phone—Plaza 9-5559
PHILADELPHIA, Clayton S. Staley, Jr., 1138 Lincoln
Liberty Bldg. Phone—Locust 7-7448
CHICAGO, Pack and Billingslea, Inc., 185 No. Wabash
Phone—Dearborn 2-0292
SAN FRANCISCO, McDonald-Thompson, 625 Market St.
Phone—Yukon 6-0647
LOS ANGELES, McDonald-Thompson, 3727 West 6th St.
Phone—Dunkirk 7-5391
SEATTLE, McDonald-Thompson, 1008 Western Ave.
Phone—Elliot 3767
HOUSTON, McDonald-Thompson, 3217 Mainrose Blvd.
Phone—Lynchburg 6711
DENVER, McDonald-Thompson, 222 Colorado National
Bank Bldg. Phone—Keystone 4669

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"100" Dust (1% Rotenone)
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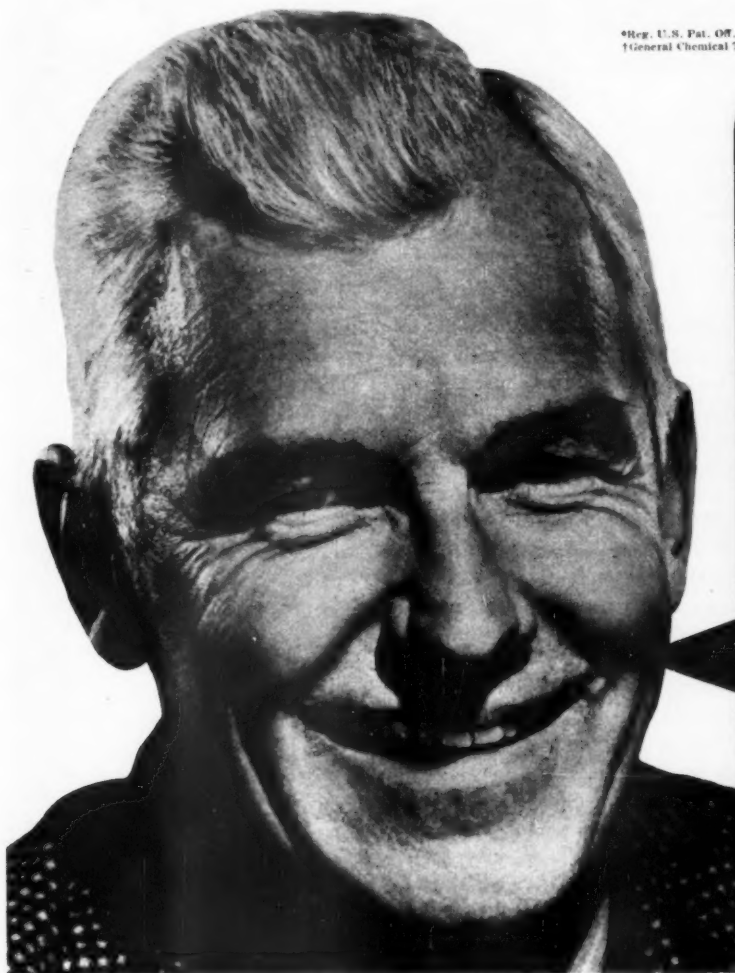
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Put 'em on your 1954
schedule now and
be sure of really
good control!



GENERAL CHEMICAL DIVISION

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FEBRUARY, 1954

7

Your most
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supplemental nitrogen . . .

Du Pont
NU GREEN®
Fertilizer Compound

45% urea nitrogen in
free-flowing shot form



Whenever your crops need supplemental nitrogen, "NuGreen" can supply it quickly, without waste, with less work. For greater yields of fruits, vegetables and certain field crops, too . . . use "NuGreen."



IN FOLIAGE SPRAYS. "NuGreen" sprays go to work immediately. The leaves absorb it quickly with no waste, no excess feeding either. Crops get the nitrogen they need even when roots are too dry, cold or wet to get nitrogen from the soil. Use it alone or in regular pest-control sprays.



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NUGREEN®

is a concentrated free-flowing shot form of urea nitrogen. It dissolves readily in water, comes in 80-lb. bags, and is available from distributors in all major agricultural areas.



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... through Chemistry

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"NuGreen" is your best buy in supplemental nitrogen—see your nearest distributor

AMERICAN FRUIT GROWER

LETTERS TO THE EDITOR

Selling through the Supermarket

Dear Editor:

I have read with interest the articles and letters concerning roadside marketing which have appeared in *AMERICAN FRUIT GROWER*.

As a former extension marketing specialist I do not hesitate to recommend this method of marketing to those growers who are favorably located and who have the time and disposition for retail selling. However, the vast majority of the commercial fruit and vegetable growers of America cannot depend upon roadside selling as a principal outlet for fresh fruit and vegetables.

Fruit and vegetable growers have made amazing progress in production methods in recent years. Many growers are doing an excellent job of grading and packaging. Yet, there is much more that needs to be done to improve the marketing of fresh fruits and vegetables.

Supermarkets, using mass display, self-service, and mass merchandising have become progressively more important as an outlet for growers' produce. Supermarket operators have realized that the food store that does an outstanding job on fresh meats and produce would be the one that would get the grocery business as well. They realized the importance of quality, freshness, large varieties, and eye-catching displays. Most supermarket operators are constantly on the alert for a good dependable source of supply of quality produce. After all, the customer is the real boss in any supermarket.

There are many examples of co-operation between supermarket operators and growers of highly perishable produce items like sweet corn, cherries, strawberries, peaches, and lettuce—co-operation which has enabled the consumer to get fresher produce at lower cost, returned the grower a greater net, and still provided the retailer with a satisfactory profit.

Super Market Institute, Inc.
Chicago 10, Ill.

Ray Higgins

Likes the "Fruit Talk" Column

Dear Editor:

Just a note to say that "Fruit Talk" is good. It is good reading. Keep it going.
East Lansing, Mich. R. H. Midinger

Difference Between Clark and Malling Dwarfs

Dear Editor:

Your "Question Box" column in the November issue includes a question regarding the difference between Clark dwarfs and Malling rootstocks. I wonder if it would not be worth mentioning that there is an important difference in the structure of the two types of dwarf trees.

A Malling rootstock is grafted with a scion of the desired variety which is thereby limited in its growth and a dwarf tree results. Of course the actual mature size of the dwarf depends upon which member of the graded series of Malling rootstocks is chosen.

In the case of the Clark dwarf, a hardy and vigorous rootstock is grafted with a short section, three to six inches, of the Clark dwarfing intermediate stock. The upper end of the Clark

dwarfing stock is in turn grafted with the desired apple scion. It seems that the Clark dwarf insert between the root and the scion restrains the growth of the tree so that a dwarf results. This occurs notwithstanding the fact that the root is a vigorous type and if directly grafted with the scion would give rise to a full-sized tree.

It is, indeed, my understanding that, as suggested in your column, there is some question as to the identity of the Clark dwarfing stock. I had thought that it was supposed to be identical with Malling VIII rather than Malling VII as you state.

Los Alamos, N. Mex. Donald P. MacMillan

Dear Editor:

In the November issue of *AMERICAN FRUIT GROWER* occurs under the "Question Box" the following question, "Can you tell me the difference between the Clark dwarfs and the Malling rootstocks?"

The answer given to this question states that there is no difference between the Clark and Malling VII. I believe this is in error, as it should state that there is no difference between the Clark and Malling VIII.

Geneva, N. Y.

Karl D. Brase

Likes Articles on Pruning

Dear Editor:

I have read your articles by M. G. Fultz and C. Lyman Calahan in the December issue of *AMERICAN FRUIT GROWER* with much interest.

I have practiced the severe method of pruning for the past 20 years. When I first started "topping" my trees, some fruit growers said that I was crazy. From the first orchard that I topped and thinned, I sold three truckloads of apples at the Wyoming railroad siding for the highest price ever paid for apples there.

When I start a young orchard, I try to have four main limbs for my framework and cut out every limb that doesn't grow in the direction that I want it. I do this while the limbs are small, no larger than my finger. I also keep the middles open so the sun can shine on every leaf sometime during the day.

Some upright growing varieties have to be pruned to the outside branches while other varieties need to be pruned to the inside branches.

I have a five-year-old peach orchard, and I have kept the trees to the 12-foot height. I have found that if you want these low trees to set heavy, I have to cut out the suckers, or shoots, the first two weeks in June and let this sap go into the foliage and buds for next year's crop. I always sow rye in my orchards around the last week in August. I disc this under in the spring to maintain humus in the soil.

I have 1,580 trees—peaches, apples, pears, plums, cherries—together with a quantity of grape vines. I am 75 but do all my work except some picking. I have been getting \$4 a bushel for my apples at my farm, and buyers bring their own baskets.

Farmington, Mo.

E. Longenecker

Dear Editor:

We enjoy reading your magazine, and we particularly liked the December 1953 issue with the articles by the New Englanders. I was particularly interested in the one by Max Fultz. He is an excellent county agent.

Sherborn, Mass.

Mrs. C. Arthur Dowse



The choice of tree men for generations



PROFESSIONAL PRUNER

No. 123 7"	No. 124 8"	No. 125 9"
\$3.00	\$3.50	\$4.00

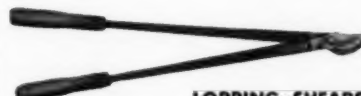
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No. 119 8" \$2.75

The original, famous "SNAP-CUT". Razor sharp blade acts on non-dulling metal anvil.



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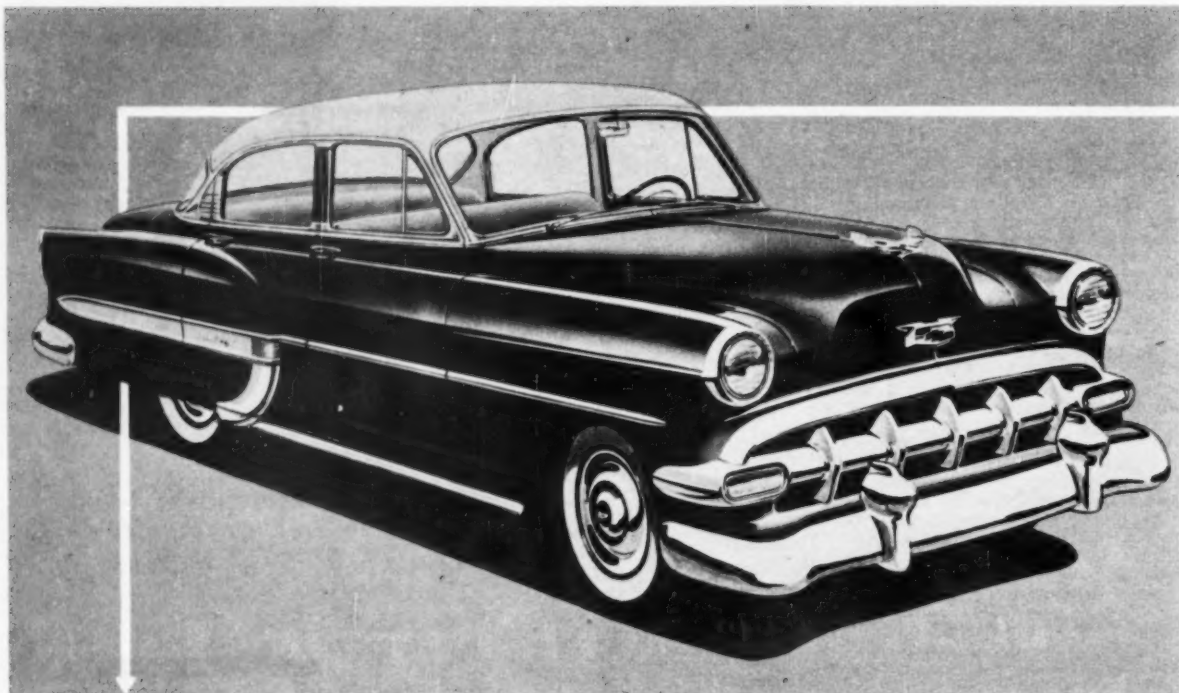
FREE: Send for full descriptive matter and prices on all Seymour Smith products for professional pruning and tree care. Prices slightly higher Denver and West.



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Brimming with beauty outside and in . . . new power and economy . . . this is the new car that combines finer performance with money-saving gas mileage!

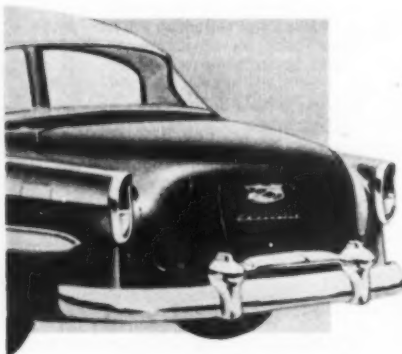
You can sum up this new 1954 Chevrolet in one simple statement of fact: *It offers more of the things you want—at lowest cost—than any other car ever offered you before.*

For instance, there's great new high-compression power to bring you finer performance and outstanding economy on country roads as well as in town.

Then, there's eye-pleasing new beauty outside and in—exciting new colors, new and finer fabrics, new styling refinements all around the car.

And besides, the new Chevrolet for '54 brings you the wonderful convenience of new automatic front window and seat controls, if you wish.*

You'll find all this and much, much more awaiting you in the lowest priced line in the low-price field. See your Chevrolet dealer and see how Chevrolet offers more things more people want . . . the reason why more people buy Chevrolets than any other car! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.



Some important new Chevrolet advantages . . .

New styling that stays new. Chevrolet's the only low-priced car that offers you Body by Fisher. And fresh, new 1954 styling outside and in makes it even more of a stand-out.

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Powerglide for all models, and a new low price on Power Steering. Now you can have smooth, thrifty Powerglide automatic transmission on any model—and enjoy the ease and safety of Power Steering at a saving. (Both features optional at extra cost.)



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EFFICIENT · ECONOMICAL COVER SPRAY

Other Famous Black Leaf® Spray Materials

Black Leaf 40 is the famous volatile nicotine insecticide which provides fast, efficient protection against apple aphids, pecan aphids, walnut aphids and other similar soft-bodied sucking insects. Controls leafhoppers, apple red-bug, most thrips, four-lined leaf bug, psylla, bud moth, pear midge, leaf-miners, pecan phylloxera, pecan nut case-bearer, and similar insects. Black Leaf 40 kills these pests two ways—by contact and by fumes—quickly and economically. Insects controlled by this method do not develop resistant strains.

Black Leaf 40 does not destroy beneficial insects, such as lady bird beetles and their larvae, aphid lion, syrphid fly, chalcid wasp, orius bug, cypria wasp, braconid wasp and the various egg parasites, and numerous other friendly insects, that attack your insect enemies. Black Leaf 40 also spares bees—the pollinizers.

Black Leaf 40 is non-caustic and does not injure foliage or fruit. It leaves no objectionable residue . . . necessitates no washing of fruits. Black Leaf 40 is compatible with all standard spray materials, ideally suited for use in combination sprays.

Black Leaf 50% DDT is an effective, wettable powder, carefully standardized, well known and widely used to control codling moth, eastern tent caterpillar, Japanese beetle, grape berry moth, rose chafer, Oriental fruit moth, leafhoppers, citrus thrips and similar insects infesting fruit.

Black Leaf Parathion is a DUSTLESS wettable powder, either 15% or 25% Parathion, a special formulation on tobacco material designed to avoid the problem of "dustiness" when filling the spray tank. Highly effective. Controls European red mite, two-spotted mite, Pacific mite, brown almond mite, various species of aphids, plum curculio, flea beetle, leafhoppers, Forbes scale and certain other similar insects. Special precautions are required to protect spray operator. Follow all directions on label and consult local agricultural authorities for information on the proper use of Parathion. Parathion sprays may be applied to fruit up to 14 days before harvest.

Black Leaf 25% Malathion is an excellent wettable powder similar to Parathion but much less hazardous to handle, requiring precautions similar to those recommended when handling DDT. It is effective against European red mite, two-spotted mite, Willamette mite, clover mite, Pacific mite, various species of aphids, Forbes scale, soft scale, pear psylla, grape leafhoppers and mealy bugs. Malathion sprays may be applied to fruit up to 14 days before harvest.

Black Leaf 25% Dieldrin is a carefully standardized wettable powder highly effective for the control of plum curculio and cat-facing insects. Most effective for the control of plum curculio, it is generally recommended for use on peaches, apples, plums and prunes, and locally recommended for certain other sprays. Application should be made during pre-bloom and post-bloom periods, but not after the first cover spray. One pound of 25% Dieldrin wettable powder in 100 gallons of water is recommended.

Black Leaf Forbush Fungicide is a standard fruit fungicide, with a record of excellent disease control . . . top yields and less pre-harvest drop . . . better color, finish, storage life and eating quality . . . and improved vigor of foliage leading to more productive trees. It is particularly effective against apple scab and cedar rust, either used alone or in combination with sulphur fungicides. It also provides excellent control of cherry leaf spot and brown rot; peach leaf curl; pear scab and leaf blight; grape black rot; plum and prune leaf spot and brown rot; raspberry anthracnose, leaf spot and spur blight; strawberry leaf spot and fruit rot; cranberry fruit rot and apricot jacket rot.

Black Leaf 50% TDE is a standard wettable powder particularly desirable as a supplemental spray for the control of red-banded leafroller. Also effective against bud moth, eastern tent caterpillar, Japanese beetle, Oriental fruit moth, tarnished plant bug, leafhoppers and certain other similar insects. Also available as an emulsifiable concentrate.

BLACK LEAF 253 has won wide acclaim by leading fruit growers. Forward-looking orchardists who have used this amazing, new, multi-purpose summer cover spray quickly discovered that it topped other more complicated and more expensive cover spray programs in TOTAL CLEAN FRUIT.

BLACK LEAF 253 provides simple, easy, one-product control of codling moth, red-banded leafroller, leafhoppers, European red mite, red spider mite, San Jose scale, Forbes scale, and similar pests.

BLACK LEAF 253 is Black Leaf Tobacco Base "impregnated" with 25% of DDT and 3% of Parathion by an exclusive process.

DUSTLESS. Black Leaf 253 is scientifically treated to eliminate dust. Just dump it in the water as the spray tank is refilling.

COMPATIBLE. Mixes with all the fungicides and other materials recommended in combination with DDT and Parathion.

LESS RESIDUE. Black Leaf 253 provides excellent control with minimum chemical residue and essentially no visible residue.

STREAMLINE your cover spray program with all-summer use of economical, easy-to-use, highly-effective Black Leaf 253. Full directions on each package. Write for information.

VIRGINIA-CAROLINA CHEMICAL CORPORATION
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DN-289 is recommended for spring dormant use on apples, pears, cherries, plums, currants, pecans—but *not* on peaches. It is completely water-soluble—easy to mix and use. Always consult the label on the container for complete directions and precautions for handling this effective *dinitro* material.

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**American
Fruit Grower**

• Fruit for Health •

Looking Ahead in Orchard INSECT CONTROL

New materials and methods continue promising but the alert grower will not toss caution to the winds

By B. A. PORTER

U. S. Department of Agriculture

THE turn of the year is the traditional time for stock-taking and for looking back over the past and ahead to the future. A forward look is more important than a backward one, although much of value can be learned from the past.

A short time ago I had occasion to prepare estimates of the losses caused by orchard insects. This wasn't a simple job. Estimating potential losses is easy. In the absence of control measures few fruit crops would have any commercial value. In many localities codling moth worms would drop just about all of the apple crop by midsummer, leaving little or nothing for late worms and other insects, or for diseases. If nothing were done to control grape leafhoppers they would ruin the leaves before fall, the crop would be reduced, and the grapes would be of very poor quality and low in sugar content. Examples of this kind could be multiplied indefinitely.

Accurate information on the average losses actually sustained by growers are

The photograph shows Edward Penny (left), tractor operator, and H. T. Velie, owner, Valley View Fruit Farm, Marlboro, N. Y., all set for the yearly spray battle with insect pests.

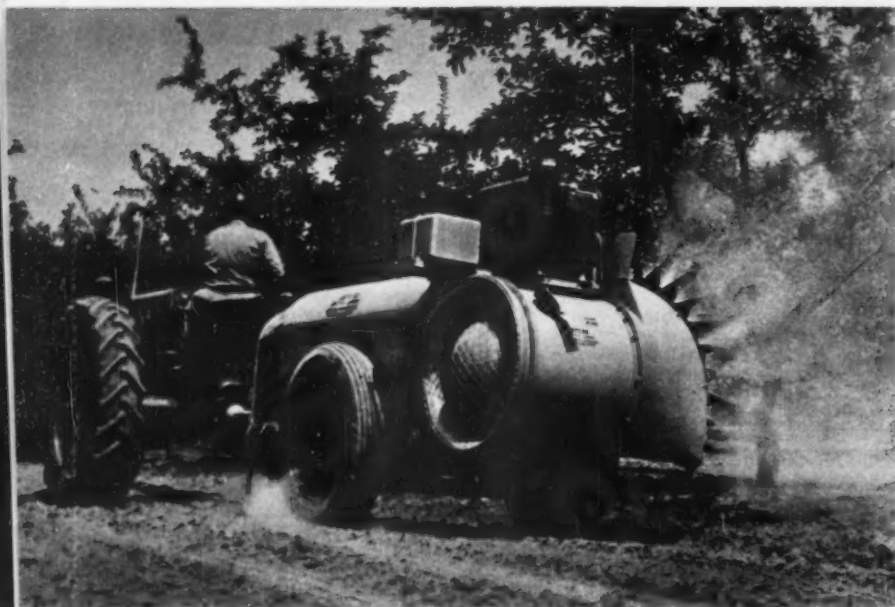
much harder to get. Many of the better growers have well-nigh eliminated insect damage from their orchards. Experimental plots maintained by my own unit during the past 15 years tell an interesting and significant story. In the early 1940's, apples receiving the standard lead arsenate schedule in experiments in four localities were about 25 per cent wormy. In the late 1940's, with DDT the standard, the average for standard treatments for the same stations was about four per cent. If it hadn't been for abnormally high infestations in one of the localities one season the wormy fruit would have averaged less than two per cent. With many other fruit insects the situation is much the same. It would be fine if this favorable condition could continue for a long time, but there are some contrary indications.

Developments during the past season are not likely to result in major changes in grower spray programs. About the usual number of new materials became available for study. Ultimately some of them will find a place in fruit insect control. In a few orchards in some areas the codling moth became more abundant than it was a few years ago. Whether this means the beginning of resistance to DDT, or whether it was the result of seasonal conditions, is still an open question. For the most part DDT is giving a degree of control that would not have been thought possible 10 years ago. Parathion and related phosphorus compounds, and dieldrin in early-season sprays, are proving to be the solution of the plum curculio and most other insect problems on peach.

Mist blowers applying concentrate or semi-concentrate sprays are being used more and more. In many areas the results have been reasonably good; in other areas the results have not been entirely satisfactory. One trouble seems to be poor coverage in the tops of large trees, where the conventional hydraulic sprayer has also often failed, unless special attention is paid to that part of the tree.

(Continued on page 44)





Left—Airblast attachment spraying bearing apple trees, made by F. E. Myers & Bro., Co., Ashland, Ohio, may be used as a concentrate sprayer.

Below—Bean Speedaire applying 4x concentrate mist spray. Machine is made by John Bean Div., Food Machinery & Chemical Corp., Lansing, Mich.

CONCENTRATE SPRAYING

Comes of Age

Midwest growers are rapidly and successfully changing over to this new method of spraying

By ARTHUR E. MITCHELL

Michigan State College

DURING the last five years concentrate spraying in the Midwest has developed from an experimental practice to an integral part of fruit production. At least one-fourth of the tree fruit acreage in Michigan was sprayed with concentrate mixtures in 1953.

The rapid change to this method of spraying came in 1951 with the introduction of air-blast attachments for high pressure conventional sprayers. These air-blast units have made it economically possible for growers with small operations and those with smaller trees such as cherries, plums, and peaches, to convert from conventional spraying to low volume concentrate spraying without the purchase of the more expensive air-blast sprayers.

For large operations and particularly those with mature bearing apple trees, the larger air-blast capacity machines, such as the Speed Sprayer, the Myers Concentrate Sprayer, the Friend air-

blast sprayer and the Hardie Air King Sprayer, have proven more satisfactory than the smaller air-blast units. Some growers, interested in a dust program early in the season, have purchased combination sprayer-dusters, such as the new Niagara Liqui-Duster, and have used these machines favorably for both dusting and concentrate spraying.

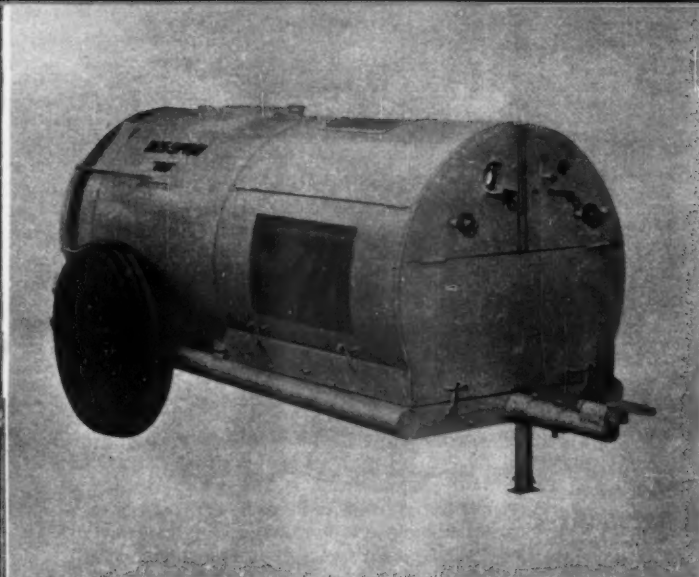
The trend for application of all spray chemicals is in concentrate form. The question is what concentrations are most effective and economical to use. The answer is related to: 1) the type of spray coverage necessary for the chemical to be effective; 2) the type of spray machine being used; and 3) the individual using the machine.

Spray coverage has been discussed many times but with the many new spray chemicals now in everyday use, and with concentrate spraying becoming standard practice, repetition seems necessary. When spraying in the con-

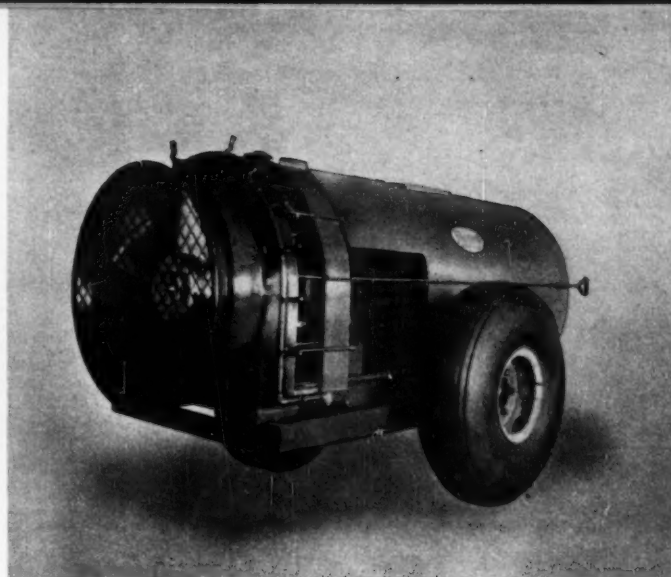
ventional way, a large volume of water is used to disperse a small amount of chemical completely over the many surfaces of the tree. By contrast, in concentrate spraying air created by the sprayer replaces a large portion of the water used as a dispersing agent in conventional spraying. However, a certain amount of water is still necessary as a spreading and sticking agent. The water and chemical are dispersed by the air-blast onto the surfaces of the leaves and fruit as small droplets. Good coverage in concentrate spraying is an even distribution of the spray mixture as small deposits close together over the entire tree.

When controlling diseases good, uniform coverage is necessary. Sometimes this is accomplished by repeated applications and thus economic control is

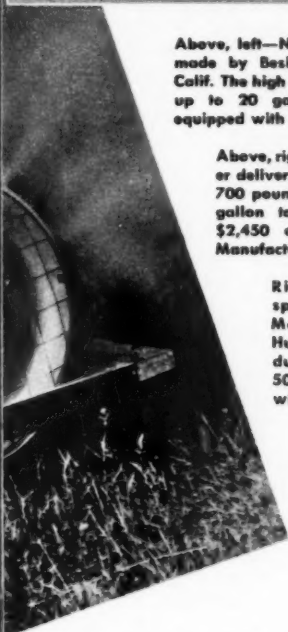




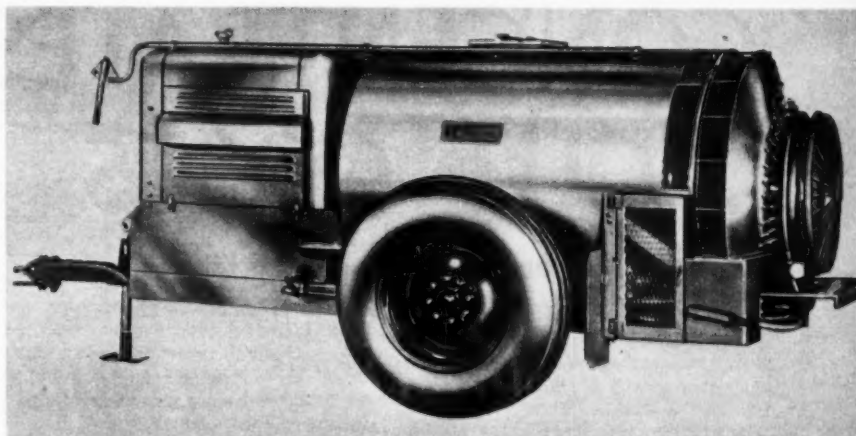
Above, left—New Bes-Spray Model 320, made by Besler Corporation, Oakland, Calif. The high pressure pump will deliver up to 20 gallons per minute. It is equipped with a 300- or 400-gallon tank.



Above, right—Friend Airmate sprayer delivers 25 gallons per minute at 700 pounds pressure. It has a 300-gallon tank. Machine costs only \$2,450 and is made by Friend Manufacturing Co., Gasport, N. Y.



Right—Hurricane air-blast sprayer made by Hardie Manufacturing Company, Hudson, Mich., is built with dual fan equipment. It has 500-gallon tank. The pump will deliver 100 g.p.m.



attained. However, to protect against apple scab or brown rot during periods of infection early in the season when vegetative growth is rapid, complete coverage from each application is imperative. This is true whether eradica-tive or protective fungicides are used. When spraying ahead of infection many times complete coverage is accom-plished by redistribution from rain of chemical deposits scattered over the surfaces of the leaves and fruit.

By contrast, with the introduction of such new organic insecticides as DDT, parathion, and dieldrin, insects are killed by crawling over and by consuming some of the chemical. Owing to the great possibility of the insect coming in contact with the chemical, fair coverage using these potent insecticides many times results in good control. This is not true, however, for such insects as aphids and mites which travel in a limited area and multiply and feed in protected places. Coverage for protection against these pests must be

good to be effective. Thus it is clear that good coverage is still necessary for good pest control.

Midwestern growers using concentrate spraying are pruning more severely, reducing the height of trees, and thinning out branches to make the trees more open. They have recognized the necessity of adapting the tree to the concentrate spraying by pruning. This practice has not only increased the advantages of concentrate spraying but has resulted also in other advantages. Spraying costs have been reduced as less spray is required for good coverage. Fruit size and color have been improved. And picking costs have been reduced since smaller trees are more readily harvested.

The concentration that can be used effectively in any spray machine depends upon the air-blast capacity of the sprayer, the design of the discharge nozzles, the size of the trees to be covered, and the rate of travel while spraying. It is safe to say that the air-blast sprayers, including the air-blast attachments being used effectively in commercial fruit production, may be operated satisfactorily using 2x mixtures

and applying one-half the amount of spray liquid conventionally used. For higher concentrations special nozzles are usually necessary to obtain a smaller, more uniform droplet size.

The manufacturers of air-blast sprayers have information available suggesting how to use their equipment for concentrate spraying. Studies carried on in well-pruned orchards in Michigan with the Speed Sprayer, the Myers Concentrate Sprayer and the Hardie Air King Sprayer have indicated that these machines may be used successfully to deliver concentrate mixtures as high as 6x, applying one-eighth the amount of spray liquid commonly used in dilute spraying. However, most growers are using 2x to 4x concentrations.

When using high concentrations of 5x, 6x, 8x, and 10x, it is difficult to adjust the sprayer for uniform coverage in the top central portion of the trees even though they are well pruned. Also, when using high concentrations, slower rates of travel are necessary. For example, when spraying large, bearing apple trees with mixtures of 4x concentration using a Speed Sprayer traveling at

(Continued on page 46.)



Low, lightweight "Turbo-mist" sprayer, made by Okanagan Turbo Sprayer, Ltd., Penticton, B. C.

CONCENTRATES CUT COSTS

**Savings in spray materials feature
progress in the Pacific Northwest**

By J. MARSHALL

Canada Entomology Laboratory

OF the fruit growing areas in the Far West only that of British Columbia has fully accepted concentrate spraying. Whether by hand-gun or by air-blast machine, high-volume application is practically obsolete in Canada's Pacific Coast province. Immediately to the south, fruit growers of the state of Washington have been slower to adopt concentrate spraying. Nevertheless, pest control operations are carried out by tractor-drawn concentrate sprayers on several thousand acres of Washington orchards. Although there is growing interest in concentrate spraying in Oregon, the new method is by no means general procedure. Orchardists of Idaho and California appear, on the whole, to be less concerned about concentrate spraying than those of Oregon and Washington.

Thus, west of the Rocky Mountains, mechanization of spraying operations by ground-borne concentrate applicators is proceeding from north to south. To some extent that is because the Canadian orchardists have been under greater pressure to economize than their southern neighbors. To some extent it is because, by reason of size and topography, the Canadian orchards are suited for concentrate spraying.

Doubtless, too, the excellent organization of the British Columbia growers has had something to do with the changeover. The most important factor of all, however, has been the investigations on concentrate spraying carried on by the Canada and British Columbia departments of agriculture since 1946. These investigations have been centered at Summerland in British Columbia's Okanagan Valley.

In 1948 there appeared in that valley the outcome of some theorizing, and of much considerable trial and error and field experiment. It was an unorthodox machine known as the Okanagan experimental sprayer, built in, of all places, a Canadian army workshop. The experimental sprayer soon showed the feasibility of controlling orchard insects, mites, and fungus diseases with spray concentrates. It proved to be a forerunner of the light concentrate sprayers that are now operating in the West. The great majority of these machines are manufactured by three firms, one in California and two in British Columbia.

Two types of hydraulic concentrate sprayers are in use in British Columbia. One is a complete, self-powered unit. The other is known as a conversion; it

is simply an old-time, high-pressure sprayer to which has been added a gasoline-powered blower, together with air-vent and insecticide manifold. Conversions are heavier and more cumbersome than the made-for-the-job units, but are popular because of lower cost.

Recently a third type of machine has been produced. It takes advantage of the fact that many orchard tractors are now equipped with underdrives, or can be so equipped at reasonable cost. An underdrive insures sufficient engine speed at one mile per hour to provide surplus power. The small sprayer pump (10 U. S. gallons per minute), therefore, is mounted in front of the tank, and provided with a power take-off. The blower is mounted at the rear and powered with a light, air-cooled engine. Reduction in size of engine means a lighter and cheaper machine. This type of concentrate sprayer will probably meet with considerable favor among fruit growers.

Latest models of western concentrate sprayers are streamlined and less than four feet in height. They can be hauled without breakage of branches in any orchard that allows passage of a small-wheeled tractor. Since the tractor driver can ease branches out of the way as the higher parts of the tractor approach them, but cannot do the same for the sprayer, the sprayer is built lower than the tractor.

The British Columbia machines are all provided with high-pressure pumps. Cemented tungsten carbide is being increasingly used for nozzle discs and swirl plates, and in pressure regulators. No other material has been found capable of adequately withstanding the extremely abrasive action of certain spray concentrates. Axial-flow blowers have proved most efficient. Airstreams vary in volume from 7,000 cubic feet per minute to about 11,000 cubic feet, and in velocity from 90 to 120 miles per hour. With tank empty, the machines vary in weight from about 1,200 pounds to 1,700 pounds. Loaded weight does not usually exceed 3,000 pounds.

Fixed-vent concentrate sprayers have two shortcomings which, because they are inherent in the method, cannot be corrected by changes in machine design. First, they have a tendency to overspray the lower branches of trees in foliage. Second, in reaching parts of the tree that are not directly in line-of-fire, their fine, mist-like spray is less effective than the drenching spray of a high-volume machine. The latter characteristic is chiefly noticeable in dormant spraying against scale insects, when it is important that all parts of the tree be wetted with a contact insecticide.

For the last three years the Summerland Entomology Laboratory has been trying to surmount these difficulties by modifying the physical characteristics of the spray concentrates. Results have

(Continued on page 46)

FIGHTING APPLE SCAB

With Concentrate Sprays

**New England growers apply mist spray
in the rain and get excellent control**

By M. T. HILBORN

Maine Agricultural Experiment Station

IN recent years the practice of either dusting or spraying with hydraulic spray rigs during rain has apparently been gaining in popularity. A comparison of orchards receiving such treatment with others in which a regular schedule based on bud development was followed, shows that frequently the use of a fungicide in the rain has resulted in better scab control. Sometimes when a grower has stopped spraying or dusting an orchard because it seemed to be raining too hard, later he has seen scabby fruit produced on the trees that were left unprotected during that one particular rainy period.

For some years it has been considered

that one of the desirable features of a dust program for scab control is that dust seems quite effective when applied during a rain. However, in recent years many growers on a spray program have resorted to spraying trees during a critical rain and have also obtained adequate scab control.

It used to be said by some that if a grower wished to spray in the rain the amount of fungicide used per 100 gallons should be increased by 25 to 50 per cent in order to insure proper coverage of the trees. Apparently the idea was that by using this increased amount of fungicide there would still be enough retained on the wet foliage in spite of

some runoff of material to protect against scab infection.

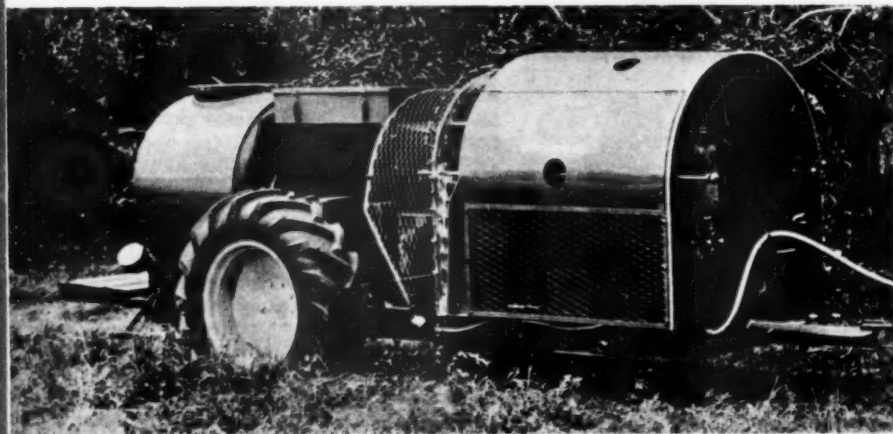
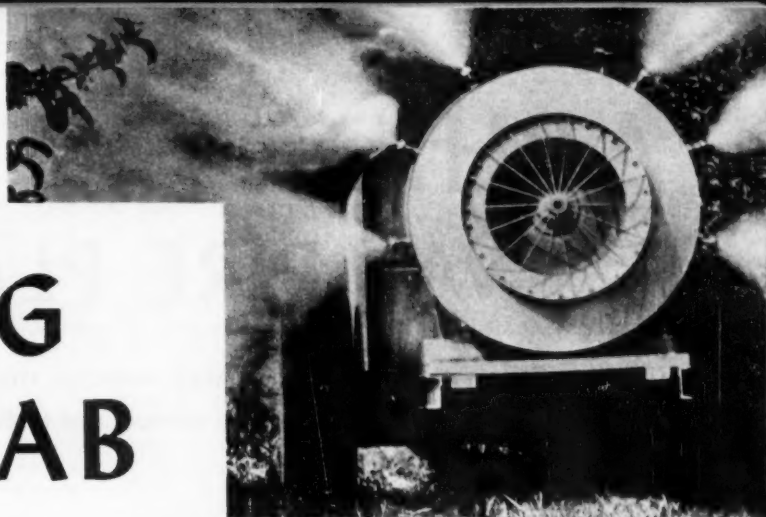
Such increase in concentration is not necessary, judging by data which follow. It is interesting to note in this connection that those growers on a dust program have never considered it desirable to increase the amount of dust applied per tree during rain over that normally used under more favorable dusting conditions.

With the advent of concentrate mist spraying several advantages were pointed out over normal dilute spraying. One of the most important was the rapidity with which a concentrate mist spray could be applied. Usually concentrate mist spray can be applied about as rapidly as a dust. It is well known that the spray pattern of concentrate mist spray differs considerably from that resulting from normal spray dilution, particularly as to particle size and the distribution of the deposit.

Because concentrate mist spray could be applied about as rapidly as a dust, several questions arose. First, would concentrate mist spray be as effective as dust when each was applied in the rain? Second, would concentrate mist spray be as effective as one at normal spray dilution when each was applied in the rain? Third, would various concentrations such as 2x, 4x, and 8x be equally effective regardless of the differences in amount of spray applied per tree?

Experimental work on the use of concentrate mist spray applied during rainy periods for apple scab control was done by the Maine Agricultural Experiment Station from 1950 to 1953, inclusive. The work during 1950 and 1951 was on spray coverage on small plots of trees and in 1952 and 1953 it was on scab control in rather large blocks of trees using five different McIntosh orchards. The trees in these

(Continued on page 58)



Photograph at top shows the Hurst Aqua-Jet applying spray at normal spray dilution. Above photograph shows 1952 model Niagara Liqui-Duster used both for concentrate mist spray and for dusting.

APHIDS . . .

VAMPIRE PLANT KILLERS

Four species attack apples, sucking the plant juices from leaves, stems, and fruit

By HOWARD BAKER
U. S. Department of Agriculture

FOUR widely distributed species of aphids, or plant lice—the rosy apple aphid, apple aphid, apple-grain aphid, and woolly apple aphid—are commonly pests of apples. They are small sucking insects that feed by sucking the plant juices from the leaves, stems, and fruit, seriously interfering with the normal development of the part attacked.

The *rosy apple aphid*, the most important of the aphids that attack apples, is generally present throughout the apple-growing areas of the United States. This aphid may be recognized by its purplish or rosy-brown color and its habit of curling leaves and deforming fruit. It especially infests the foliage surrounding the blossom or fruit clusters.

This aphid passes the winter in the egg stage on apple trees. The eggs hatch about the time the buds begin to swell and the young aphids move to and feed on the unfolding fruit buds, causing the leaves to curl as they develop.

Several generations of this aphid are produced on the apple during the spring and early summer and their feeding causes curling of the leaves and stunting and deforming of the fruit. As the weather becomes warmer, winged forms develop that migrate to the plantain, where they remain during the rest of the summer. Most of the aphids leave the trees by early in July.

Early in the fall winged forms are produced that return to the apple trees. A wingless generation of aphids is then produced that deposits the overwintering eggs on the twigs, in the axils of the buds, and in crevices in the bark. The eggs are at first pale green, later changing to a glossy black.

The *apple aphid* lives on apple trees throughout the year, and is found in the United States wherever apples are grown. It may be recognized by its green colored body and black legs and its habit of curling the leaves on succulent terminal twigs and water sprouts. Infested shoots may be stunted. It is

a more serious pest of nursery and young orchard trees than of older trees.

This aphid also passes the winter in the egg stage on the trees. The eggs hatch about the same time as those of the rosy apple aphid and there may be from nine to 17 generations a year. Winged forms that are produced may spread from one apple tree to another. Overwintering eggs are de-



A colony of apple aphids on apple tree branch. Notice how the aphids have curled the leaves.

posited in the fall, most commonly on water sprouts, but also on twigs. They are green at first, then shiny black.

The appearance of large numbers of small light-green aphids with three longitudinal stripes of darker green on their backs on the swollen apple buds



early in the spring indicates the presence of the *apple-grain aphid*. Later, when the trees are in bloom, this aphid may appear in large numbers in the blossoms, but usually causes no important injury. It leaves the apple shortly after the blooming period and migrates to grains and grasses, where it spends the summer.

This aphid passes the winter in the egg stage in crevices in the bark or on the twigs. It is pale green at first, later turning glossy black. Some of the eggs may hatch during warm periods in the winter but most of them hatch as the buds begin to swell. Several generations are produced by the time the apple blossoms fall and the aphid migrates to grains and grasses. In the fall winged migrants develop on the

AMERICAN FRUIT GROWER



Above—Woolly aphid injury to roots is most serious on nursery and newly planted trees.

Left—Woolly apple aphid colony on apple tree branch. Aphids live under the cottony mass.

Right—Eggs hatch about time buds begin to swell. Young aphids feed on unfolding leaves.

practically all apple-growing districts. It is particularly a pest of apples but also occurs on elm and, to a limited extent, on a few other trees. The woolly apple aphid hibernates on the roots of apple trees and survives mild winters on the upper portions of the trees, as well as by passing the winter in the egg stage in crevices of the bark on the elm and occasionally on the apple.

The eggs hatch with the opening of elm leaf buds, upon which the young aphids feed. Winged forms produced on elms may migrate to the apple where they establish colonies and feed and reproduce throughout the summer. Infestation on apple also builds up during the spring and summer from surviving wintering forms and from migrants from the roots.

Control—A dormant application of a dinitro spray (dinitro-o-cresol powder or sodium dinitro-o-cresylate paste) is the most effective treatment for the

tree development. Parathion, as previously recommended, may also be included in the calyx application, except on the McIntosh and related varieties, if control has not been obtained prior to that time.

Additional spray applications may be required during the summer for the apple aphid. If so, one pound of either 25 per cent malathion or 15 per cent parathion wettable powder, one-third pint of 40 per cent TEPP, or equivalent in other formulations, or three-fourths pint nicotine sulfate plus one pound spray lime in 100 gallons of water will give control.

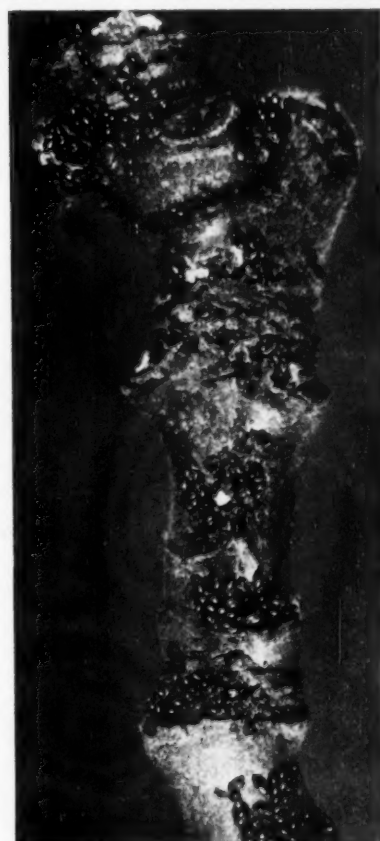
Inclusion of benzene hexachloride or parathion, as recommended for the rosy apple and apple aphids, in the first DDT cover spray will control early season infestations of the woolly apple aphid. If control is needed later, use malathion, parathion, TEPP, or nicotine sulfate as recommended for summer applications against the apple aphid.

Observe all recommended precautions in handling insecticides, especially the phosphate insecticides such as parathion and TEPP.

THE END



Masses of aphid eggs on apple branch. Photograph by Lee Jenkins, University of Missouri.



grains and grasses and return to the apple and produce egg-laying females.

The fourth species, the *woolly apple aphid*, attacks the roots as well as the upper part of the tree. Above the ground it is found chiefly on the trunks, limbs, and twigs in wounds or where the bark is tender. The rusty or purplish brown aphids live in colonies beneath whitish, cottony masses. Its attack causes twigs to become more or less deformed and swellings and deformities to occur on the roots. Injury to roots is most serious on nursery and newly planted trees. In areas where the perennial canker disease occurs in the Pacific Northwest aphids feeding above ground apparently prevent the healing of the cankers.

The woolly aphid now occurs in

overwintering eggs of the rosy apple aphid and green aphid. It will also reduce the numbers of the apple-grain aphid, although application of control measures for this species is not generally considered necessary.

The application should be made before the buds show green using one and one-half pounds of a 40 per cent dinitro powder or one and one-half quarts of a dinitro paste in 100 gallons of water. If the dormant application is not made, control can be obtained during the delayed dormant or prepink and pink periods of tree development using one pound of a 15 per cent parathion wettable powder in 100 gallons of water.

Other alternative treatments include three-fourths pint of nicotine sulfate in 100 gallons of a three per cent dormant oil emulsion during the delayed dormant period, or two pounds of a 10 per cent gamma isomer benzene hexachloride wettable powder in 100 gallons of water in the prepink or pink stage of

SPRING FROST FORECAST

Generally fair weather is expected
for the coming fruit bloom season

By IRVING P. KRICK
Meteorological Consultant



*Loveliest of trees . . .
"And since to look at things in bloom
Fifty years are little room,
A-down the woodland I will go
To see the cherry white with snow."
Housman. A Shropshire Lad.*

LAST WINTER will be remembered for its treacherous mildness. By the end of March, fruit trees, crops, and all spring work were about one month ahead of season. Apples, pears, and cherries were coming into bloom in the Pacific Northwest, peaches were already blooming in Indiana and Illinois, and peach, pear, and apricot buds were swelling fast in the Atlantic states.

It was an early spring and a dangerous one, followed by April's deadly frosts which damaged or ruined peach crops in the West, the Central states, and Florida, hit the strawberry blooms of Oklahoma, and many of the pear and apple orchards of the East.

So much for the past. And now we are facing another spring. What does 1954 hold of cheer or disappointment? How heavy will its harvest be?

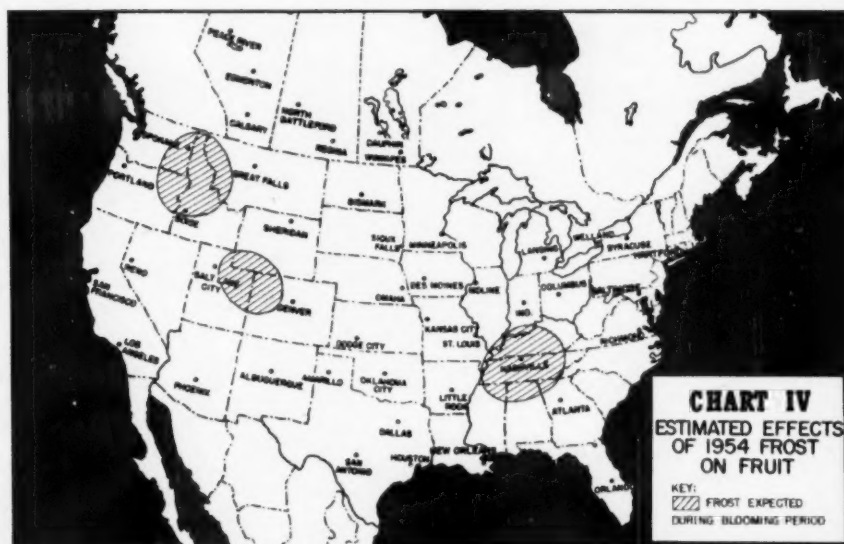
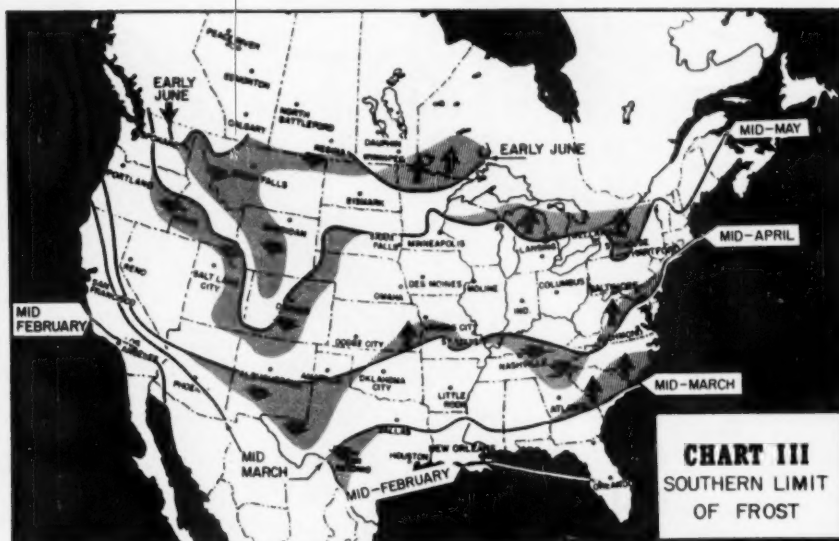
No crystal gazing is needed for the realization that this is a more seasonable winter than last. *In the West*, below normal monthly temperatures seem likely to persist into May. Precipitation is expected to be on the low side, too. (Figures 1 and 2.)

Slow spring should therefore encourage full dormancy, provide ample weather for spraying, clearing, planting cover crops, and doing all outdoor work.

In the East, on the other hand, temperatures should be generally milder than usual, and moisture above average, into June. This means that again this year the East seems to be running into an early spring and rapid early growth, with plenty of good weather for outdoor work. The same applies to some extent to the Southeast and South.

The North Central states are unlikely to feel the impact of spring until





late May when frost risk is diminishing fast, even as far north as the Canadian border.

Figure 3 shows not only average last frost dates, but our best estimate of where the last frost in 1954 will precede or succeed the average date.

In much of the West, where a last frost is expected to occur later than usual, damage could be expected to be relatively light, since the season as a whole will be late. (This statement does not apply, however, to Utah, Colorado, or Idaho where some frost damage seems bound to occur).

In the Great Lakes states and in the East also, where the last frost is expected to be relatively early, frost danger is not too great, since the season as a whole should be an early one.

In short, the commercial fruit growing areas that seem most likely to experience a measure of frost damage during blooming are those shown in Figure 4.

All in all, the picture is more favorable than that of 1953, since this year Florida has a good chance to escape spring frost.

THE END

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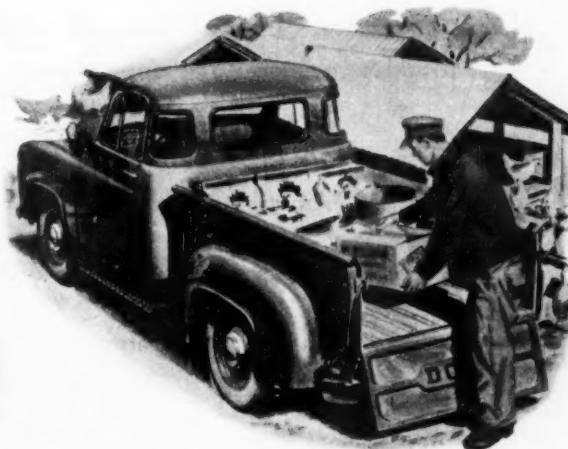
A BETTER DEAL IN STEERING EASE!

New steering system gives top maneuverability on or off the road. And Dodge continues to offer shorter turning than any other comparable trucks.

See "Break The Bank" with Bert Parks on TV (ABC, Sundays) • See "Make Room For Daddy" with Danny Thomas on TV (ABC, Tuesdays) • Hear "The Roy Rogers Show" on radio (NBC, Thursdays) • Enter the Dodge 40th Anniversary All-America Contest. See your dealer.

OFFER

A better deal for the man at the wheel



A BETTER DEAL IN LOADING HEIGHTS!

Pick-up floors as low as 23 $\frac{3}{4}$ inches from the ground . . . to give greater loading ease. Lower running board for easier entry. Lower hood for added visibility.

A BETTER DEAL IN POWER! In addition to cost-cutting 6's, Dodge now offers the most powerful V-8 engines of all leading trucks; available in 1 $\frac{1}{2}$ -, 2-, and 2 $\frac{1}{2}$ -ton models . . . standard in 2 $\frac{3}{4}$ -, 3-, 3 $\frac{1}{2}$ -ton. You get the right power for *your* farm job.

A BETTER DEAL FOR YOUR POCKETBOOK—Dependable Dodge trucks are built for economy and long life under the most rugged farm conditions; yet they are priced with the lowest. See your friendly Dodge dealer; you'll find him competent, reliable and interested in giving you the best truck value.

NEW! Even greater value . . . yet still priced with the lowest!

DODGE "Job-Rated" TRUCKS



A YEAR'S REVIEW OF *Diseases and Their Control*

Antibiotics, greater use of organic fungicides, and some new chemical names have appeared in the ever-changing control picture

By JOHN C. DUNEGAN

U. S. Department of Agriculture

THE 1953 fruit season was marked by an upsurge of peach scab infections in southern orchards, by an unusually large number of infections by the apple scab fungus in some districts of the Pacific Northwest, and by numerous twig and shoot infections on the Jonathan and Stayman varieties by the apple mildew fungus in some eastern orchards. Blossom blight of the peach due to the brown rot fungus was the cause of serious concern in southeastern peach orchards, but this threat of possible serious fruit rot did not materialize since dry weather prevailed at harvest-time. Apple growers likewise had very little trouble with sooty blotch and fly speck, and the *Botryosphaeria* fruit rot that caused extensive losses in 1952 was a minor problem in the dry weather of the 1953 harvest season.

The 1953 season will also be remembered as the first year of extensive field experiments for the control of pear blight with antibiotic materials. Spraying experiments in Delaware, Ohio, Missouri, California, and Oregon all point to the possibility that streptomycin may be an effective agent for the control of this important disease. Small-scale tree-injection experiments at Plant Industry Station, Beltsville, Md., also suggest the possibility that terramycin may be of value for control of bacterial spot of stone fruits. Terramycin, or

Photograph shows the spraying of apple trees with an antibiotic for prevention of fire blight. Photograph courtesy Chas. Pfizer & Co.

some product from it, is readily translocated throughout peach trees and markedly retards the defoliation that is the aftermath of bacterial spot infection on the leaves.

Thus, while the 1953 season was marked by reoccurrence of some fungus diseases long considered not too difficult to control, the outlook for the control of pear blight and possibly of bacterial spot is most promising.

Aside from preliminary tests with new compounds by agricultural experiment station workers, the 1953 season was one in which the products of fungicide research and development in recent years were further evaluated in commercial use. The trend continues toward the expanded use of organic fungicides.

Lime sulfur. The use of this material in commercial apple orchards continues to decline. However, the value of one application as a delayed-dormant or a prepink spray was demonstrated again in 1953. Growers who followed this practice had a minimum number of primary scab infections in spite of an early infection period that occurred before the regular blossom spray program was started. Lime sulfur is a cheap and efficient fungicide for use as protection

against primary infections by the apple scab fungus. It is so phytotoxic, however, that it should not be used later than the prepink spray on apples.

Elemental sulfur. In many areas in the East the apple blossom and leaf buds opened during a period of rainy weather. Numerous primary infections were established before the regular spray program was started. Almost without exception the reports indicate that the various forms of elemental sulfur used alone failed to retard the further development of these primary scab infections. When small quantities of any one of the various organic materials were added to the sulfur the control of the scab fungus was greatly enhanced. However, many investigators reported that sulfur-sprayed apples had a very poor finish. In Virginia it was noted that fruit sprayed with sulfur was injured more seriously by late frosts than fruit on adjacent trees sprayed with organic materials.

Sulfur, of course, continues to be the main material for peach disease control, but its use as a spray material for apples is declining.

Bordeaux Mixture. This standard fungicide, long in use, continues to be used as a dormant spray for peach leaf curl and to some extent during the growing season for the control of the

(Continued on page 47)

State NEWS

- **3½ Million New Fruit Consumers a Year**
- **"Keep America Growing . . . Quality Fruit"**

NEW YORK—The 112-year-old Duffy-Mott Company, Inc., the nation's largest apple product and prune juice processors, concluded the year of 1953 with the purchase of Clapp's, the original line of baby foods.

Among other advantages, the new addition will permit Duffy-Mott not only to cut management and operating costs but also to stabilize employment for its 1,500 regular employees and lengthen the work periods for its more than 3,000 seasonal workers, stated H. E. Meinhold, president of Mott's.

Duffy-Mott pioneered in the bottling of cider, the glass-packing of applesauce—an industry which has grown from a total of three million cases annually in 1930 to 14 million today—the popularizing of apple juice as an all-year-round drink, and the marketing of Sunsweet prune juice. Recently Sunsweet whole cooked prunes were introduced by the company.

With the American baby crop expanding at the rate of 3,500,000 annually, and with prospects of that rate continuing into the immediate future, Mott's foresees an increasingly large volume of baby food sales.

NEW JERSEY—Twenty-six years as secretary of the New Jersey State Horticultural Society. That is the splendid record of Prof. Arthur J. Farley, New Brunswick, who retired from that office at the conclusion of the 79th annual meeting of the society held recently at Atlantic City. Prof. Farley will continue as treasurer of the society.

Ernest G. Christ, New Brunswick, was elected to fill the secretaryship. Charles H. Nissley, New Brunswick, was elected president for 1954 and Thomas S. DeCou, Haddonfield, was elected vice-president.

CALIFORNIA—Quality! Quality! Quality! That's the cry of fruit groups and wholesale and retail merchants and consumers throughout the land.

To help producers attain this goal a movie on growing quality fruit has been released by California Spray-Chemical Corporation. Teamwork of grower, fieldman, and scientist in producing top-quality, disease-free fruit is dramatized in the new 16 mm. color-and-sound motion picture, "Keep America Growing . . . Quality Fruit."

Copies of this 30-minute movie, which includes film locations in orchards, packing houses, warehouses, market, railroad, and truck centers, may be secured on loan by contacting ORTHO dealers of California Spray-Chemical Corporation or by contacting the company's home office in Richmond, Calif.

CONNECTICUT—Harold B. Young, Wallingford, was elected president of the Connecticut Pomological Society at its 63rd annual meeting. William D. Ravenscroft, manager of Avalon Farm Orchards, Bantam, was elected vice-president. Re-elected were: H. C. C. Miles, Milford, secretary-emeritus; S. P. Hollister,

Storrs, secretary; and Nelson B. Cooke, Branford, treasurer.

Mark Bishop, Cheshire, president of the society in 1940, was awarded a Certificate of Distinction—as the outstanding grower and for his civic work.

The panel on marketing created a lot of lively discussion with none of the panel members in full agreement as to methods and policies except on this one point: GIVE THE PUBLIC WHAT THEY WANT.

Hort society secretaries, please note: At the pomological meeting two years ago it was voted to raise the dues from \$3 to \$5, effective for 1954. This change did not affect the renewal memberships at the time of the annual meeting. It may, however, affect those to whom I send bills for dues.—S. P. Hollister, Sec'y, Storrs.

MARYLAND—The 56th annual meeting of the Maryland State Horticultural Society was one of the best attended in recent years. William C. Main of Hagerstown succeeded R. Samuel Dillon, Jr., of Hancock as president; and Albert F. Vierheller of College Park was elected to his 26th year as secretary-treasurer. New first vice-president is Norman J. Fike,

Cordova, and Russell N. Flanagan, Thurmont, is second vice-president.

The convention asked that legislation be passed removing the sales tax from insecticides and fungicides in Maryland. A resolution was also passed asking that water rights of communities and individuals be clearly and legally established. Maryland growers also recognize the value and usefulness of the project for the measurement of the rate of apple movement and urged its re-establishment.

An irrigation panel led by President Dillon concluded that irrigation is a good investment provided the grower makes a thorough investigation of and is certain about water rights. Success in increasing the size of peaches was mentioned as a particular advantage of irrigation. Two to three inches of water every 10 days or two weeks was recommended as an ideal application.

Talking on peach production, W. W. Magill, University of Kentucky horticulturist, said that planting your orchard in the wrong location can prove to be extremely costly. He stated that had he checked the location for his orchard, using several maximum-minimum

(Continued on page 50)



A. J. Farley

FRUIT PEST HANDBOOK

(THIRTIETH OF A SERIES)

APPLE BLACK ROT

THE black rot fungus attacks leaves, fruit, and bark of apple trees in many parts of the country. It causes a much more destructive disease than is commonly realized and year after year continues to destroy many apples as they approach maturity.

On the leaves the fungus causes the very common frog-eye leaf spot. This phase of the disease develops soon after the leaves unfold and appears as small, brown, circular spots that later become lobed and irregular.

The black rot fungus lives but a short time in the leaf spot and the subsequent enlargement and irregular shape of the spot are due to secondary fungi that invade the leaf tissues killed by the black rot fungus. Badly infected leaves turn yellow and drop prematurely. In some seasons neglected orchards may be defoliated before the fruit is ripe.

The black rot fungus produces a firm, dark-colored rot of the fruit, frequently marked by concentric bands of lighter color. There is rarely more than one infection on a fruit, but the fungus spreads rapidly throughout the entire apple.

In contrast to the bitter rot fungus, it produces no spores on the fruit and the apple, though completely rotted, retains its shape for a much longer time than does an apple infected by the bitter rot fungus.

(Continued on page 59)

Photos show black rot on leaves, twig, fruit.

Courtesy USDA



TRIPLE ECONOMY

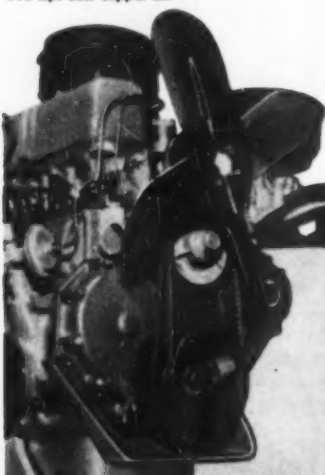
It's the biggest truck news of '54

Never before have so many important advancements been made in all the 3 biggest truck savings-areas as appear in the NEW Ford Trucks for '54! The mightiest concentration of power per cubic inch ever built into any truck engine line! Better working facilities for the driver. Bigger capacities too!

New Ford Trucks for '54 offer important *money-saving* advancements you just can't get in any other trucks. Take engines, for example. For the power they develop, Ford Truck engines for '54 have less cubic inch displacement than engines in other-make lines.

For instance, Ford's 239-cu. in. *Power King V-8* develops its 130 h.p. on as much as 43 cubic inches less displacement. *Every cubic inch of displacement in an engine is a "hungry inch" that demands gas.* Small-displacement engines normally need less gas. And that's only one big factor behind Ford Truck *Triple Economy* for 1954.

115-h.p. Cost Clipper Six



5 great truck engines!

130-h.p. Power King V-8



V-8 or SIX!

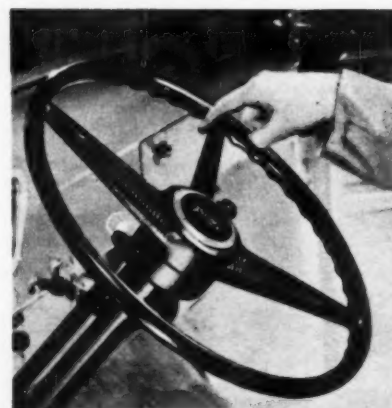
138-h.p. Power King V-8

152-h.p. Cargo King V-8

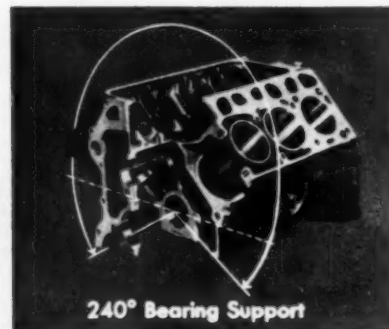
170-h.p. Cargo King V-8



Only Ford gives you Gas-Saving, LOW-FRICTION, High-Compression, Overhead-Valve, Deep-Block engines in ALL truck models! All with advancements like Ford-designed overhead rotating valves for longer valve life, short-reach manifolds for higher breathing efficiency.



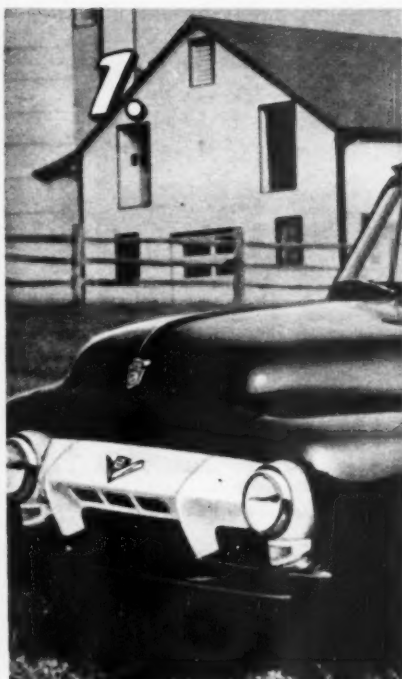
NEW Ford Master-Guide Power Steering standard on Series T-800, optional at extra cost on most other BIG JOBS! Cuts steering effort as much as 75%.



240° Bearing Support

Smooth power! **NEW Deep-Block design!** Ford engine blocks have deep-skirt crankcases, wide-base flywheel housings, for high structural rigidity.

AMERICAN FRUIT GROWER



1. NEW LOW-FRICTION engines offer power increases up to 23%! One reason for greater power with gas-saving economy: new wedge-shaped combustion chambers create higher turbulence, burn gas more completely, without pre-ignition.



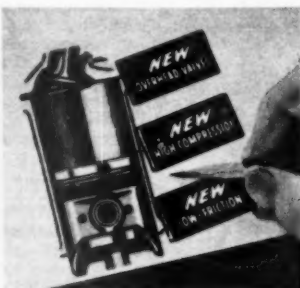
2. NEW 3-MAN DRIVERIZED CABS for easier, safer control! For economy that results from keeping the driver *fresh* on the job! Exclusive Ford seat-shock snubbers. New woven plastic upholstery "breathes" like cloth. Huge curved one-piece windshield for visibility unlimited!



3. NEW Capacities! 6-Wheelers, Cab Forwards, over 220 models! Ford's new line goes all the way from Pickups to 60,000-lb. GCW BIG JOBS—new factory-built 6-wheelers—two more giant Cab Forward Series. Minimum dead-weight increases payload capacities.



ONLY Ford has DRIVERIZED CAB comfort! Deluxe Cab shown has foam rubber seat padding, plus 15 other custom extras (at extra cost).



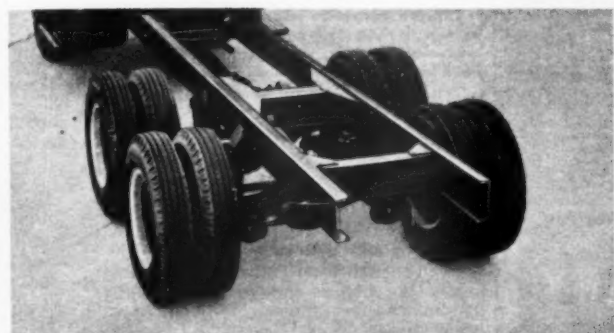
NEW Ford engines reduce friction losses up to 33%! Short-stroke design cuts internal friction, delivers more usable power per gallon of gas.



NEW Fordomatic Drive saves driver time and energy. Fully automatic! No clutching! No shifting! Available in all Ford light-duty models for '54.*



NEW Vacuum Boosted Power Brakes now available on half-tonners make stopping up to 25% easier.* Pressure needed to stop truck won't break light bulb.



For '54, Gross capacities increased up to 48% with two all-new Tandem-Axle BIG JOBS. Rated up to 60,000 lbs. GCW! Four wheelbases, 144 in. to 192 in. Priced with the lowest. Ford-designed chassis with Ford-installed tandem axles.

*All items marked by an asterisk in this advertisement are available at worth-while extra cost



Farm Favorite—new F-600 ("2-ton"). Choice of three LOW-FRICTION engines.

FORD *TRIPLE ECONOMY* TRUCKS
MORE TRUCK FOR YOUR MONEY



Since 1885, Stauffer has been producing quality pesticides according to exacting specifications. That is why growers everywhere know that, pound for pound, Stauffer branded products give better protection because they are *always* the same high quality. Here are five of a complete line of insecticides and fungicides that you can depend upon for your spraying and dusting schedules:

CAPTAN 50-W

An organic fungicide for apple, peach, cherry, strawberry, and other fruit, to effectively control a variety of fungi—assures superior apple yields of outstanding size, finish, and color.

MAGNETIC "70" SULPHUR PASTE

An economical fine sulphur that adheres to apples and peaches even through prolonged bad weather—combined with CAPTAN 50-W, assures excellent disease control in early season application.

MAGNETIC "95"

A Microfine Wettable Sulphur—ideal early season spray on apple, peach, cherry, and plum—microfine sulphur of maximum effectiveness—use it as spray or dust!

"MAGNETIC 90"

Microfine Dusting Sulphur—free flowing—formulated especially for use during light, misty rains.

SULPHENONE 50-W

Safe, economical, new organic miticide—controls European red mite, two-spotted mite, and other orchard mites.

"You can always depend on Stauffer pesticides"

Send now for descriptive literature about these and other Stauffer pesticides

STAUFFER CHEMICAL COMPANY

380 Madison Avenue, New York, N. Y.

221 N. LaSalle Street, Chicago, Ill.

Houston, Texas

Apopka, Florida

THE QUESTION BOX

Should apple trees injured by winter cold be pruned heavily?—Oregon

If the injury is to the tree above ground, light pruning should be practiced. If it is a root injury, the top should be pruned in relation to the amount of root injury.

In what way do zinc sprays affect fruit trees?—Washington

Minute quantities of zinc are absorbed through the bark or buds of dormant trees or through the leaves of trees in foliage when a zinc spray is applied. This zinc is needed by the tree for its physiological functions. Some zinc is absorbed from the soil but not enough to meet the requirements of the tree.

I have been confused on the compatibility of malathion with other materials, particularly the trace elements. Can you help me out?—British Columbia

In the research laboratory of American Cyanamid Company, storage tests have been conducted with malathion in combination with various insecticides and fungicides. Results of these tests indicate that malathion breaks down rapidly in combination with coppers, and there is some breakdown with calcium arsenate. Fermate and Parzate, when used in combination with malathion, also bring about a gradual decomposition of malathion. The company does not have data regarding the compatibility of malathion with zinc oxide, magnesium sulphate, manganese sulphate, and boric acid. However, they feel that the only one that may be incompatible is zinc oxide.

As malathion is sensitive to pH and moisture, diluents selected should be of a pH of five to seven with a moisture content of less than two per cent.

Will you advise me where the book *Holy Earth* by Liberty Hyde Bailey may be obtained? This was mentioned in your editorial, "The Holy Earth" in the November issue.—New Jersey

Write Mrs. Helen Hull, President, American Horticultural Council, Boonton, N. J., for reprints of the *Holy Earth*.

Can you give me any information on the Owosso apple crate?—Wisconsin

The Owosso apple crate is actually a field crate which is used primarily in Michigan. It has a capacity of one and one-fifth bushels. Many Michigan growers run their apples over a grader and then put them directly into the crate. The apples are stored and sold in this container. Usually the crates are returned to the grower to be used again.



Husk-E peaches grown by orchardists Husk and Low of New Hampshire are big and colorful.

GROW PEACHES UP NORTH?

New Hampshire growers are doing it—successfully

By CHARLES L. STRATTON

THE problem of securing a good price for their peach crop is one that Harry Husk and Robert Low of Northwood Ridge, N.H., do not need to worry about. They get their own price, retail 100 per cent, and do not have to worry about competition as it's practically non-existent in their section. They raise peaches farther north than most commercial growers.

They have not taken a chance in growing peaches this far north for they have planned ahead. Their oldest orchard is located on a fairly steep hillside at an elevation of 870 feet and has perfect air drainage to free them of frost worries. For a number of years Low kept accurate weather records and found that this orchard was not hit by frost after April 1 or before October 25.

Erosion Controlled

When he set out the orchard he contoured the hillside to avoid erosion and to make travel easier on the hill. This is now standard practice in hillside orchards, but a few years ago Low's orchard was the second in the state to be so treated.

But there's more to growing peaches than just letting them grow and watching out for frost. These growers keep their orchards well cultivated up until the middle of June, then let them go for the rest of the season. After the picking is completed they seed the orchards to winter rye and plow it under in the spring to return the humus to the soil.

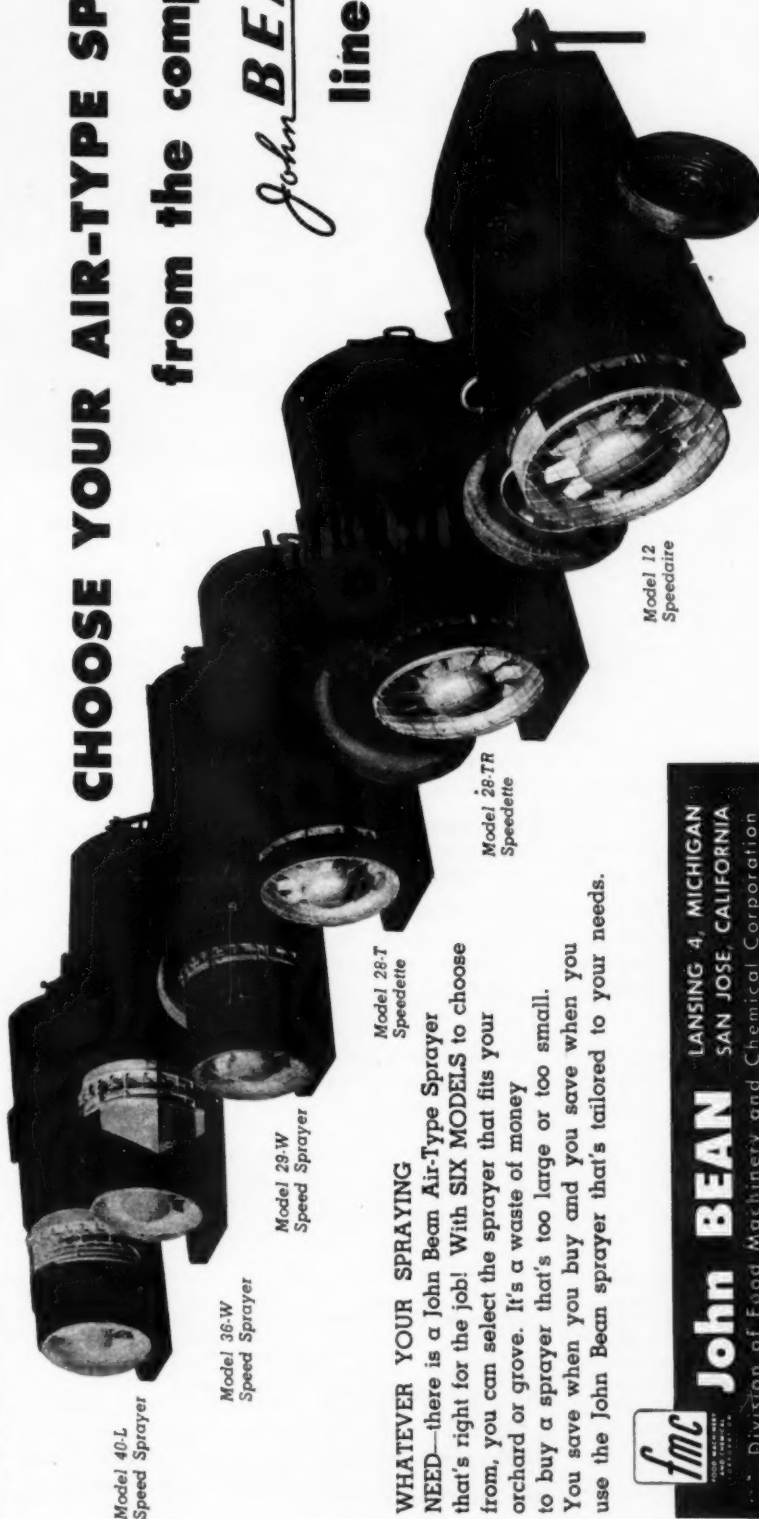
They spray the scrub growth along

(Continued on page 32)

CHOOSE YOUR AIR-TYPE SPRAYER

from the complete

John **BEAN**
line



WHATEVER YOUR SPRAYING

NEED—there is a John Bean Air-Type Sprayer that's right for the job! With SIX MODELS to choose from, you can select the sprayer that fits your orchard or grove. It's a waste of money to buy a sprayer that's too large or too small. You save when you buy and you save when you use the John Bean sprayer that's tailored to your needs.

fmc
FARM MACHINERY CORPORATION

John BEAN

LANSING 4, MICHIGAN
SAN JOSE, CALIFORNIA

Division of Food Machinery and Chemical Corporation



How To Beat the Labor Shortage!

Mechanized handling with CLARK trucks is a time-tested solution to the labor shortage which is facing growers and processors. And equally important, you'll make more money by drastically reducing costs. Here are some FACTS* about fruit handling with fork trucks:

1. A 25,000-bushel apple crop was handled at-the-farm with one fork truck and a crew of 3 men; previously required a crew of 7.
2. One processor reported that fork trucks on his receiving platform enable 15 men to do the work that formerly required 60.
3. In one case in Michigan, the manual-labor cost of loading cherries onto trucks was 56.5¢ per 100 lugs; when a fork truck handled the same job, the labor cost was 4.7¢.

In addition, fork truck handling has proved that it will reduce bruising, cut grading and packing costs, reduce overtime work, reduce spillage, reduce crate and lug breakage.

Don't pass up this opportunity to eliminate headaches and save big money! Discuss it with your local CLARK dealer—he's listed in the Yellow Pages of your 'phone book, under "Trucks, Industrial."

*These and other interesting facts are contained in a booklet, "Fruit Handling With Fork-Lift Trucks," published by the Michigan State College Agricultural Experimental Station, in cooperation with the U. S. Department of Agriculture. Use the coupon to get a copy.

Industrial Truck Division
CLARK EQUIPMENT COMPANY, Battle Creek 142, Mich.

- ☐ Please send free booklet on fruit handling.
☐ Please have representative call.

**CLARK
EQUIPMENT**

Name _____
Firm Name _____
Street _____
City _____ Zone _____ State _____

PEACHES UP NORTH?

(Continued from page 31)

the high deer fences which surround the orchards to rid the area of any disease-carrying wild cherry growth. They tag trees that do not appear to be doing well, and they thin by hand to three inches apart by tapping branches gently with a length of rubber hose attached to the end of a stick.

Spray Program

A regular spray and dust schedule is followed throughout the season, starting with straight sulfur dust in the pink stage for blossom blight, brown rot, and scab. For borer control the lower trunks of the trees are sprayed with two good sprayings of four pounds of 50 per cent DDT to 10 gallons of water toward the middle and end of July.

It has become standard practice in these orchards also to cut the tops back every year. Low says he cuts them back as much as three feet which avoids limb breakage.

And they are continually testing new varieties for size, flavor, quality, and color. One of their test peaches especially promising was the Dixired which did not seem to require an over-abundance of sunlight, had little fuzz, had high color, and started the picking season off the middle of August.

Aside from the experimental trees the commercial money-making varieties here are Golden Jubilee, Halehaven, and Elberta. They find the Halehaven is the best producer.

Peaches Are Stored

The first year these growers were in business they sold all their peaches wholesale as they ripened too quickly on trees during a hot spell. The next year they built their own cold storage plant in a corner of the barn.

Measuring 20x40 feet, it is large enough to hold a sizable crop for a few days. The floor consists of four inches of cement laid on three feet of cinders. The walls are of wallboard and enclose six inches of glass wool insulation. One compressor and a two-fin cooler hold the room at 42°. They have found this temperature will keep peaches three weeks, if necessary.

There is such a large demand for Husk-E peaches that Low and Husk hardly need to advertise. And the agricultural fairs and other events entered help to win for them both blue ribbons and customers. Practically 90 per cent of their peach crop is sold at a roadside stand.

They claim that it's size and flavor that sell peaches, and that is just what their customers get. THE END

Advertisers will be glad to send you details of their products. Be sure to mention AMERICAN FRUIT GROWER when you write.

AMERICAN FRUIT GROWER



Fred L. Overley comparing the growth of Arbruzzi rye with that of Rosen rye (right) in an orchard cover crop plot at the Tree Fruit Experiment Station where he served as superintendent from the time of its purchase in 1938 until his retirement in 1950.

Washington Growers Honor PIONEER HORTICULTURIST

By EDWIN SMITH

Fred L. Overley who built the famed Tree Fruit Experiment Station is to be remembered with a memorial which will accelerate the work he so carefully established

ON NOVEMBER 22, 1953, while returning across the Grand Coulee Equalizing Reservoir from a goose-hunting trip with three companions, Fred Overley, well known horticulturist of Washington state, was drowned when their boat foundered off Steamboat Rock during a severe gale. Two of the party were rescued by another hunting party; another's body was recovered after extensive search by diving and other means. To date Fred lies beneath the waters of a locality where he loved to fish and hunt.

His many friends throughout the Northwest and the nation were shocked by this tragic end. On December 6 at the First Methodist Church of Wenatchee, of which Fred was a member, impressive memorial services were attended by many of the state's horticulturists and fruit growers who were assembling for the 49th annual convention of the Washington State Horticultural Association.

When the convention opened on December 7, the meetings were fittingly dedicated to Fred Overley in recognition of his 30 years of devoted service to the state's fruit industry. He had been a featured speaker at the association's meetings for over a quarter of a century. At the time of his death he was second vice-president—an office that was traditionally tantamount to the honor of elevation to the presidency.

The history of Fred Overley's 40 years of service to American horticulture starts in the Midwest after he had received his academic training in horticulture under the late S. A. Beach at Iowa State College. He had a pioneer's background. He was born on December 30, 1884 at Center Junction, Iowa, later lived in Kansas and Texas, then returned to Iowa to enter Iowa State College, whence he received his Bachelor of Science degree in horticulture in 1912 and his Master's degree in 1913. He was a member of the Chi Pi

fraternity and was honored by election to Alpha Zeta during his college days.

During an interlude of this collegiate period he became acquainted with the Pacific Northwest while spending a season to travel and accrue funds for college, working in lumber camps and, when these were shut down by a strike, on a farm on the West Coast. He was married to Minnie E. Weaver on June 11, 1913, at Ames, Iowa, and is survived by Mrs. Overley and one daughter, Mrs. Marjorie Hughes.

Following college, Mr. Overley taught at Ames from 1913 to 1917 when he moved to Sidney, Iowa, to enter the agricultural extension service. In 1919 he went to Warren County as county agent and there received national honors for his work on the Hessian fly. He was called to the State College of Washington at Pullman as a professor of horticulture in 1923.

The fruit growers of the Wenatchee district sent a committee to Pullman in

WESTERN SECTION

1926 to make a plea that the State College Agricultural Experiment Station carry on more effective experiments in the Wenatchee area. Mr. Overley and the late Anthony Spuler, an entomologist, were selected to move to Wenatchee to comply with this request. This was the initiatory step to the establishment of the W.S.C. Tree Fruit Experiment Station at Wenatchee, of which Mr. Overley may truly be said to be the father, and the establishment of which represents the most impressive chapter of his horticultural career.

Wide Influence

The impact of Fred Overley's horticultural services, however, extended beyond Washington state since he was active in the Northwest Association of Horticulturists, Entomologists, and Plant Pathologists for 30 years, and for about 20 years served as secretary of the Western Co-operative Spray Conference that annually met to evaluate the results of Pacific Coast experiments in orchard spraying and to suggest co-operative lines of research work in this field for the various research institutions of the West. He also was long a member who contributed to the proceedings of the American Society for Horticultural Science.

The work at Wenatchee and vicinity in 1926 and the following eleven years was carried on in commercial orchards with Chelan County, the Wenatchee Valley Traffic Association, and other organizations supplying part of the funds for operation. Progress made along these lines of experimental work resulted in an enactment by the state legislature of 1937 that authorized the board of regents of the Washington State Agricultural Experiment Station to establish and maintain a substation at Wenatchee.

A committee of growers from Yakima and Wenatchee made a survey and finally selected for purchase a 45-acre orchard at the present headquarters northwest of the City of Wenatchee. Thus, on January 1, 1938, the Tree Fruit Experiment Station came into existence, with the previous owner's farm house to be adapted for headquarters' laboratory and office.

Fred Overley was the station's superintendent from this time until his retirement in 1950 when he was followed by the present superintendent, Dr. Archie Van Doren. Mr. Overley was retained for an additional year, to be present during the period of transition, during which time he compiled a history of the station and summarized some of the work done. At the time of his death he was on the staff as emeritus horticulturist.

While he was superintendent, the station property increased from 45 to 104.87 acres. The story behind this in-

crease reflects the great friendship Fred enjoyed with the fruit growers of the state. The first increase of 15 acres of orchard was adjacent property, purchased by P. A. Combelle and W. A. Luce and operated by the station until the proceeds to the owners met the original cost, after which they donated the property to the state. The second addition of about 40 adjoining acres, known as the Robison orchard, was purchased by a holding company of growers in 1948. It was operated by the station under Mr. Overley's direction until the state was able to purchase it in 1951.

In addition to the above acquisitions at the station's headquarters, a remote tract of 70 acres, known as the Columbia View Station in Douglas County, was made available through the research and scholarship committee of the Washington State Horticultural Association for the study of virus diseases and other horticultural problems by the USDA and the Tree Fruit Experiment Station co-operating. This land was recently purchased by the board of regents of the State College of Washington.

Since Mr. Overley started his work at Wenatchee, the number on the staff has increased from the original two to a current staff of 16, not counting a number on the staff of the U. S. Public Health Service that has a toxicology laboratory at the Tree Fruit Experiment Station, graduate students, nor summer assistants who come to the station for temporary periods of study and work.

Extensive Activity

During this time of station growth Fred Overley was author of approximately 100 publications covering a wide field of horticultural interest, such as 20 years of orchard fertilizer experiments, sprinkler irrigation, spray injury to trees, fruit tree leaf deficiency, pollination studies, studies of spray residue removal, winter injury to fruit trees, the economics of thinning out trees in old orchards, and cover crops in arsenic-toxic soils.

His interest in cover crops and soil management resulted in his suggesting the design of the culti-cutter, one of the tools that is now being extensively used to replace heavy orchard discing.

The story of Fred Overley would be abruptly truncated were we to record solely his professional accomplishments. He had the capacity to live deeply, close to nature. He shared a priceless companionship with his associates on fishing and hunting trips and, with the enthusiastic partnership of Mrs. Overley, was host to scores of visiting professional and student horticulturists at their mountain-forest retreat on beautiful Lake Wenatchee.

Nearby the Overley summer home

on Lake Wenatchee is the property of the Camp Fire Girls' organization. The creation and development of this beautiful camp largely came about through Fred Overley's chairmanship of a camp committee of the Kiwanis Club. He had been district president of the Camp Fire Girls for many years and had received the national organization's highest award, the Gulick Award, in recognition of his services to the movement.

He was president of the Wenatchee Kiwanis Club in 1948 and at the time of his death was serving as Lt. Governor of Kiwanis International. Since his retirement, he had been chairman of the agricultural committee of the Wenatchee Chamber of Commerce and was serving as a director and head of the landscaping committee of the Chelan County Fair Association.

In recognition of this eventful life, the Chicago Alumni Association of the Iowa State College selected Mr. Overley as the 1951 recipient of the Alumni Merit Award for services in the welfare of humanity.

Memorial Fund

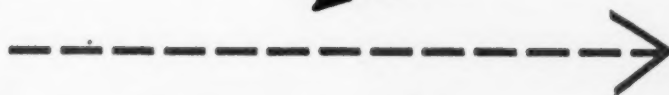
In affectionate and reverent tribute to the memory of their friend and benefactor, the members of the Washington State Horticultural Association adopted a resolution on December 7, 1953, authorizing their Research and Scholarship Committee to canvass the fruit growers and interested industries of the state for subscriptions to a fund to be used for a suitable Fred Overley Memorial at the Tree Fruit Experiment Station. It has been the suggestion of the committee that fruit growers subscribe to this fund at the rate of one dollar per acre of orchard owned. This would raise approximately \$90,000 for the memorial.

The Research and Scholarship Committee will decide what form the memorial will take. It is known that Mr. Overley long dreamed of a modern laboratory and office building that would take the place of the crowded old farm house that has been used since the station was started. There are plans on the drawing board for a \$200,000 science building at the station that would house not only the Tree Fruit Experiment Station staff, but the offices of the agricultural extension service and technicians of the USDA as well.

It is the hope of many that the memorial funds may be supplemented by legislative appropriations to make this building a reality and that when completed it may be dedicated as the FRED OVERLEY MEMORIAL SCIENCE BUILDING. Such a memorial would indeed be appropriate for one who has contributed so richly to the welfare of the fruit growers of Washington state. THE END

You, too, can get
better fruit prices,
earn higher crop profits with a
planned ORTHO Spray Program
featuring the new fungicide,

**HERE'S
PROOF!**



HERE'S PROOF !

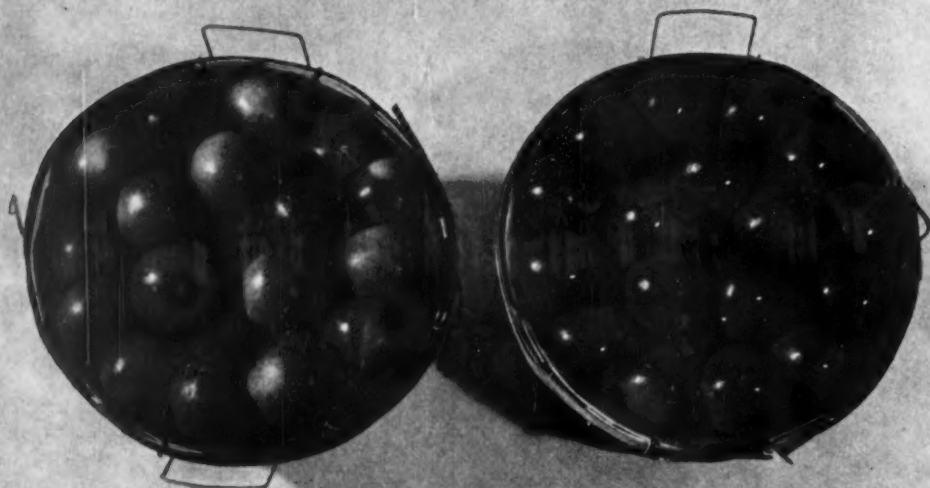
How ORTHOCIDE, in an ORTHO
fruit finish, bigger yields,
brings growers higher

Apples from George Harmyk
& Sons' orchards, Keyport,
New Jersey.

The Rome Beauties at right,
sprayed with ORTHOCIDE,
brought \$5.00 per bushel.
Those on the left, sprayed
with other materials,
brought \$4.00 per bushel.

**ORTHOCIDE-
SPRAYED
APPLES
BRING
HIGHER
PRICES!**

The Golden Delicious U.S. #1
apples at right were
sprayed with ORTHOCIDE,
sold for \$3.75 per bushel.
Those at left, sprayed with
other materials, brought
\$2.75 per bushel.



**program, gives finer
better keeping qualities;
prices, more net profits...**

ORTHOCIDE contains the new fungicidal chemical Captan—chemically different from other fungicides now used—and effective in controlling a wide variety of plant diseases. ORTHOCIDE is a top quality formulation of Captan with fine particle sizes and superior sticking, wetting and spreading qualities. It is especially designed and tailored to fit an ORTHO program.

**"Better color and finish;
less loss to scab."**

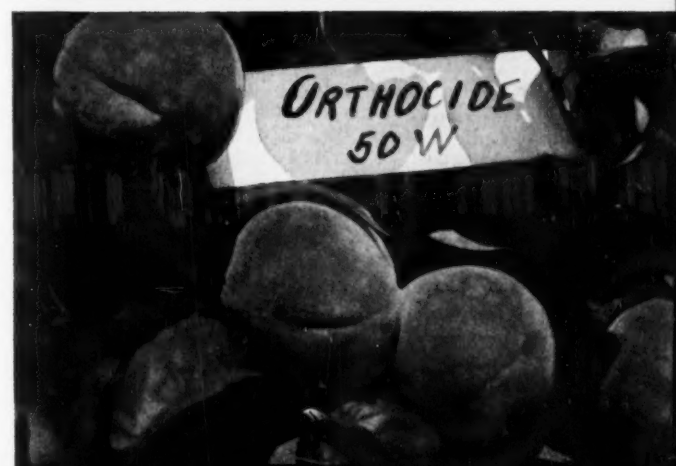
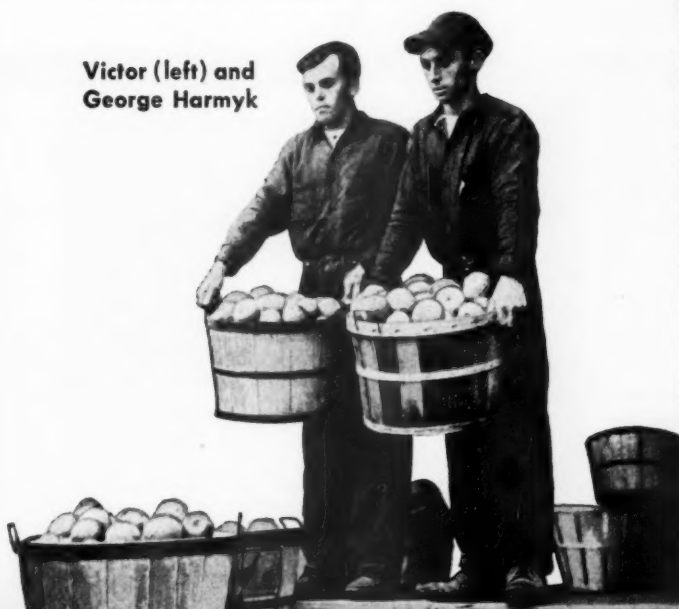
George Harmyk & Sons, R.F.D. #1, Box 191, Keyport, New Jersey, have 14 acres of apples, used ORTHOCIDE on 7 acres. They report:

"ORTHOCIDE has given us a better finish than we've ever had before. There was no russetting at all on the ORTHOCIDE-treated acreage and approximately 50% on the sulfur (6) covers and other materials (3).

"The finer finish of the ORTHOCIDE-treated orchard run U.S. #1 Golden Delicious will bring approximately \$1 more than the same grade of sulfur-treated fruit (\$2.75 vs. \$3.75). Better color and finish on same grade of Rome Beauties bring \$5.00 per bushel vs. \$4.00 for sulfur-sprayed.

"There was a 25% loss to scab in the sulfur-sprayed plots; no loss in ORTHOCIDE-treated plots."

**Victor (left) and
George Harmyk**

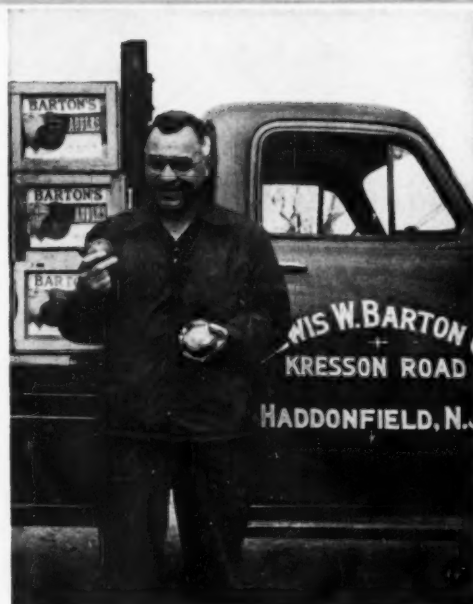


The peaches above, treated with sulfur, cracked and rotted during the ripening period. Note the beautiful natural color of the ORTHOCIDE-sprayed peaches below.

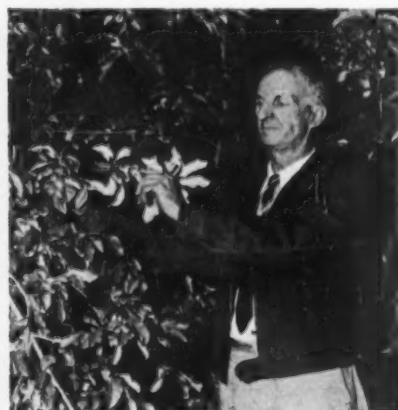
Large size, better color and superior finish are but three of the characteristics shown by the ORTHOCIDE-sprayed apples (bottom row). Note the severe damage possible on sulfur-sprayed fruit (top row). Remember that ORTHOCIDE works best in a full ORTHO program.



**Three year experience with
ORTHOCIDE brought higher grade fruit,
25% increase in U.S. Fancy, improved
peaches' market value 50¢ per bushel,
gave 100% control of cherry leaf spot!**



Lewis W. Barton, Kresson Road, Haddonfield, New Jersey raises 60 acres of apples (Red and Golden Delicious, Stayman Wine-saps and Romes). He has used ORTHOCIDE for three years. Mr. Barton reports complete control of scab even in the last two seasons of exceptionally heavy rainfall. The ORTHO program with ORTHOCIDE has given him higher grade fruit...at least a 25% increase



T.M. 15 REG. U.S. PAT. OFF. ORTHOCIDE, ORTHO, ORTHOPHOS, VAPOPHOS, PERSISTO, VAPOTONE, TAG, ORTHENE, ORTHOTRAN

in U. S. Fancy. The superior finish of his ORTHOCIDE-treated fruit has been worth at least \$1.00 per bushel extra on the market.

Mr. Barton says: "ORTHOCIDE has contributed directly to the increase in yields and size of my fruit. The yield from plots which have been treated with ORTHOCIDE is considerably higher than what we have obtained with other programs. Losses from decay in storage and shipment have been practically nil. ORTHOCIDE-treated fruit will last from 30/60 days longer than fruit from trees whose

foliage has been injured by harsh treatment."

PEACHES—This grower used ORTHOCIDE on 30 acres of peaches. **Result:** No brown rot whereas before it was always present to the extent of 20% crop loss. The improved growth of the peaches increased their market value at least 50¢ per bushel.

CHERRIES—ORTHOCIDE was applied to 10 acres of sour cherries. **Result:** This fungicide gave 100% control of cherry leaf spot even under adverse weather conditions.

Helped grower "make more money than ever before"

Fred L. Oates—Gore, Va. reports that he had been ready to sell out his orchards because sulfur was russetting his apples to the point where most of the pack was sold Utility Grade. Although ORTHOCIDE cost him more initially he received a 25% better yield than before and enough U. S. #1 crated tree run to pay for the extra cost of the spray and give

him a very fine profit besides. Only 14 crates of his entire acreage were under 2 1/4". Of 600 bushels of Red Delicious 486 were 2 1/2" and up; the remainder were 2 1/4" to 2 1/2". Says Mr. Oates—"The ORTHOCIDE-sprayed apples looked like glass when they were put through the brushing machine. I made more money than ever before in 32 years as an orchardist."

**For best profit-making results—
ORTHOCIDE should be used as a part of
a complete ORTHO Spray Program**

Don't tie yourself down to old fashioned disease controls that place a ceiling on your profits. Cash in on higher net profits this year. Other outstanding ORTHO products for use in ORTHO programs are:

ORTHOPHOS 4 Spray	ORTHO Standard Lead Arsenate	TAG Fungicide
VAPOPHOS 15 Wettable	PERSISTO Wettable	ORTHENE 3-D Wettable
ORTHOTRAN 50 Wettable	VAPOTONE XX Spray	ORTHO-MITE 15 Wettable

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Pacific

NEWS AND VIEWS

Less Stoop

Three chemicals are taking much of the stoop out of strawberry production in California. Broadleaf weeds in established plantings are controlled with 2,4-D. Grass as young seedlings or germinating seed can be killed with IPC. And Crag Herbicide No. 1 is used like 2,4-D to kill the broadleaf weeds.

New hope for a spray thinner for peaches comes from recent tests of the growth regulator, chloro IPC. The material is applied well after the fruit is formed. A simple spray treatment for post-bloom thinning is just what peach growers need. Further experiments are planned for next season.

Change the slogan "an apple a day keeps the doctor away" to "an apple a day keeps the dentist away," says Jack DeGraaf of the Fruit-o-Matic Company. He points out that doctors, dentists, and school authorities blame much tooth decay on the consumption of soft drinks and candies. Making apples available to school children will cut down on tooth cavities.

Three Ventura County lemon associations will co-operate in using British West Indies field labor. This will be the first use of such labor in California. Transportation is by airplane.

Too Much Smog

According to Dr. Haagen-Smith of the California Institute of Technology, 800 tons of pollutants are poured daily into the atmosphere in and around Los Angeles. Worried about a trend towards smaller fruit, some citrus growers blame this unwelcome situation on a combination of lessened intensity of sunlight and polluted air from industrial smoke mixed with the exhausts of hundreds of thousands of automobiles and motor trucks.

A. C. Foster, USDA plant pathologist, recently reported on persistence of organic pesticides in the soil. He found that toxic effects could persist as long as eight years after application depending on the chemical and the type of soil. One of the most persistent is DDT, he reported. Heavy applications of DDT in a fruit spray schedule for three years resulted in accumulations under the trees great enough to interfere with growth of rye as a winter cover crop.

One of the dithiocarbamates known as ziram has been found effective in controlling bullseye rot, a disease peculiar to Pacific Coast apple areas. Ziram is sold under the trade name "Zerlate" by the Du Pont Company.

Economists have figured out that raising U. S. personal income by .869 per cent would raise the price of apples one per cent. Or dropping the size of the crop by .865 per cent would raise prices by one per cent.

Edward L. Merzoian, grape grower of Tulare County, California, realized his fondest dream with the completion of a cement cold storage plant which will hold 500 carloads of grapes. Merzoian, who came from Armenia in 1900 at the age of four, gives the University of California a big share of credit for his success. He has religiously attended grape demonstrations put on by specialists from Davis for over 40 years.

Forty per cent of the total cost of production of almonds is in harvesting, say extension economists in studies in Stanislaus County, California. Under favorable conditions, savings up to \$20 an acre can be made by mechanizing the harvest. The

changeover to mechanical harvesting could involve a capital outlay of \$6,000 to \$12,000. Custom rates charged for mechanical picking last year, including an operator, generally ranged from \$10 to \$12 an hour.

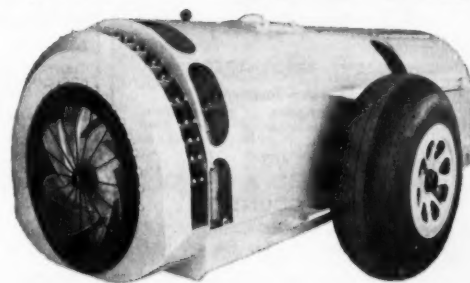
One-Ton Boxes

The Van Herick walnut orchard, Lake County, California, introduced a faster harvest system when one ton boxes of nuts were handled on pallets with fork-lift trucks following mechanical pick-up harvesting. The box system, claims Van Herick, permits an earlier start in harvest. Hull-on nuts are sprinkled and allowed to lie overnight to loosen the hulls.

Forty-six million boxes of citrus fruit, both fresh and processed, returned \$172 million to California and Arizona Sunkist growers in the 1952-53 shipping season. Despite these good returns, low production per acre, small sizes, and low quality severely handicapped the returns of many growers.

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Maximum Coverage - Minimum Material

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AVAILABLE IN 3 SIZES

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110 H.P. 8 CYL. ENGINE

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WESTERN SECTION

HORMONES for Strawberries!

State Colleges prove hormones make berries grow bigger, increase yields 30%.
Substantial increases in fruit size and total yields, by spraying strawberries with a hormone solution, have been reported by Oregon and Michigan State Colleges. Growers who use BERRY-SET Hormone Spray can increase size and yields of strawberries up to 50%, blackberries up to 100%.

Oregon test results
Dr. Q. B. Zielinski reported on his work with the hormone chemical NXY in a "Fruit Grower" article last May. Working with strawberries he obtained increases averaging 20%. Growers who have used BERRY-SET, a special formula which contains NXY, have obtained even bigger increases.

Michigan recommends BERRY-SET
As a result of tests on strawberries, Michigan State last year recommended BERRY-SET to many growers. Using both NXY and BERRY-SET, Michigan obtained size increases averaging 30%. In some BERRY-SET tests, increases were over 50%.

For blackberries, too!
Earlier research has increased blackberry size up to 100%. BERRY-SET is the only commercial hormone spray which has been used regularly by thousands of growers since 1950, long before the current Oregon and Michigan tests were even started. It is the only hormone product recommended for strawberries and blackberries. Order your supply of easy-to-use BERRY-SET now!
3 oz. (trial size).....\$1.00
12 oz. (makes 50 gals.).....3.00
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By Fred Tyler
Ninety-six pages of ideas for making a living in the country. The eight pages on roadside marketing are worth the price of the book. \$1.00

WESTERN FRUIT GARDENING

By Reid M. Brooks and Claron O. Hesse
A handbook for the home gardener on fruit varieties; climatic adaptations; soil, water, and nutrient requirements; pruning and propagation; control of diseases and pests. \$4.50

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This new third edition brings up-to-date the latest findings in modern fruit production. Two new sections of vital importance to plant culture today have been included—Light Relations and Growth Regulators. \$9.00

Sent postpaid on receipt of remittance

AMERICAN FRUIT GROWER
Willoughby, Ohio

Apricot Cutter Has Successful Season

The California apricot cutter, which cut over 20 tons of fruit this season, is now equipped with "power steering"

By R. R. PARKS

University of California

THE University of California apricot cutter completed another successful season in San Benito County cutting over 20 tons of fresh fruit.

Orchard run apricots are fed in bulk to the water tank where the fruit is washed and "singulated" out of a trough to the timed wheel which places them in cups on a moving belt. This belt carries the fruit over a water manifold which orients the apricots in a flat position ready for the knives.

The spring loaded knives between the two drums make one pass around the fruit to halve it. Then each half is carried six inches farther on its drum by means of stainless steel slotted slides. The pitters are five needle punches that go through from the back side of the fruit to eject the pit, if it remains in either half of the fruit. A flipper paddle knocks the ejected pits into the pipe catcher from which they drop to a box.

New Feature

A feature of this year's machine is "power steering." The hydraulic system with "memory" bars that ride the top of the fruit, open and close the fruit-holding drums so that the knives continue to cut through the midpoint of the fruit regardless of its size as it comes along.

An addition to the "singulating" feature of the washed tub is a vibrator and flume liners that will accom-

modate fruit of most any size or condition. A rejector nozzle supplies the swirling water to the tub for washing and removing the fruit. It also rejects the top fruit when more than one tries to leave the tub at one time.

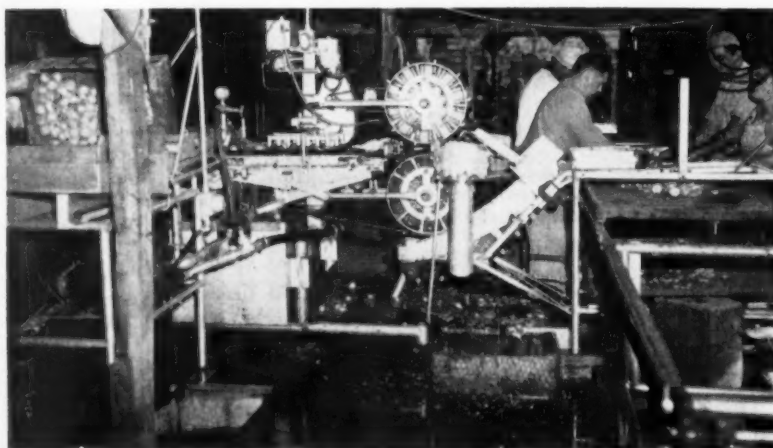
Compared to hand cutting, a crew of five can do the work of 10 hand cutters to cut some five tons of fruit a day. With the addition of an automatic traying device the crew can be reduced to two or three persons, one to dump the incoming fruit, the other to watch the tray for stray pits.

Peach Growers Like It

Peach growers have displayed considerable interest in this machine because the large apricots of San Benito County are comparable to small peaches in other sections of the state. The machine can be fitted to handle any size fruit.

One advantage discovered for the machine-cut fruit is that it takes sulfur better and looks better to the trade even months after drying. Another advantage for the grower is that no fruit needs to be wasted. The machine makes good dried fruit out of fruit the hand cutters and canneries would reject as too soft to handle.

The machine was designed for farm dry yard use and will be reasonable in price. It operates off house current and the wash tub recirculates water so that a large fresh supply is not needed. With refrigeration to hold the fruit much of the dry yard operation can be reduced to family labor size.



A crew of five can cut five tons of fruit a day as compared to 10 men hand cutting. It has been found that the apricot cutter also will handle peaches of small size.



long time **big lift**

for fruit income

As a fruit grower, you're in a strong position when you're powered to expand the orchard and do anything it takes to increase income. The 50 hp. Allis-Chalmers HD-5 Diesel Tractor sets you up for many years to come.

You're powered to handle big, high-pressure sprayers over hills and around contours — when the time is right, regardless of weather. You can pull trees . . . clear land . . . pile brush . . . subsoil . . . chisel . . . do deep plowing . . . pull heavy discs . . . operate packing and processing machinery. End all the problems and expense of hiring outside power. Save scores of tedious man-hours, too.

While you're making a capital equipment investment for the long-time future, you're way ahead to buy *the best*. The HD-5 starts fast on diesel fuel at the press of a button. It operates with unequalled smoothness and ease. And you'll cheer for its freedom from service attention. Truck rollers, idlers and final drives require lubrication only once each 1,000 hours. All lube points are *accessible*, easy to reach. The HD-5 saves you many an hour; many a pound of lubricant.

To give your income this long-time big lift, see your nearby Allis-Chalmers dealer, now.

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TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

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Lower first cost, proved operating economy and higher resale value make it your best power buy

When you buy a Ford Tractor, you can see the results of the Ford Motor Company's resources, mass production efficiency and engineering skill in the lower price you pay for this bigger, heavier, more powerful tractor, with its many great value and performance features.

You'll soon find that Ford's newly designed big bore, low friction engine gives you the power you need with remarkable economy in fuel, oil and upkeep. So, along with lower first cost, you get lower operating cost.

When you finally come to sell your tractor, you'll also discover that a Ford Tractor, besides having lower first cost, brings more at trade-in time. Let your nearby Ford Tractor Dealer show you how easily this tractor, and the Dearborn Implements designed to work with it, handle the work you want done.



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Birmingham, Michigan



Ford Farming

MEANS BETTER WORK...
MORE INCOME PER ACRE

LEMON GROWERS PROSPER

**No more surplus fruit,
thanks to frozen lemonade**

FOR many years, prior to 1949, approximately one-third of a normal California lemon crop was eliminated from fresh fruit channels each year to stabilize the market. Very few of the lemons thus eliminated were manufactured into products suitable for human consumption. Most of them went into peel products—pectin and stock feed. The juice went down the drain.

But things are different now. The increasing popularity of frozen lemonade is being reflected in a tremendous sale of this product with no visible slackening in the demand for fresh lemons. As a result, almost none of the 1952-53 season's crop was destroyed.

The 1952-53 season lemon crop totaled 29,317 carloads, as compared with 30,556 carloads the previous season and 31,761 carloads in 1950-51. Of these 29,317 carloads, 19,286 were sold in domestic fresh fruit channels compared with 20,104 carloads the previous season and the three-year average of 19,237 carloads. The average f.o.b. price was \$6.28 a box—only 23 cents under the average the previous season but 12 cents a box more than the three-year average.

Frozen Lemonade Up

The 1952-53 season pack of frozen lemonade was 8,150,951 gallons compared with 5,468,204 gallons the previous season. Putting it another way, 10,751 carloads, or 34.09 per cent of the crop, was marketed in the form of frozen lemonade and lemon juice contrasted with 19,286 carloads marketed in fresh form domestically and 1,121 cars marketed fresh in export channels. Only 1.21 per cent of the entire crop was eliminated because of decay and other defects that made them unsuitable for any practical use.

Frozen lemonade was marketed in a limited way in 1949. But it was not until 1951 that it was marketed in a big way. And when one considers that prior to 1949 approximately 10,000 carloads of lemons were eliminated each season—virtually destroyed—as a means of stabilizing the price of the lemons that did go to market, the returns on the more than 10,000 cars marketed in the form of frozen lemonade last season is clear velvet to the California growers.—Willis H. Parker

AMERICAN FRUIT GROWER

DON'T WORRY ABOUT "SCAB WEATHER"...

KOLODUST IN THE RAIN

FOR REAL PROTECTION WHEN YOU NEED IT MOST!

Wet weather is scab weather. That's when spores are shooting, when danger of severe infection is greatest. And that's just when dusting in the rain with Kolodust gives your trees protection you can get in no other way!

Kolodust is the *only* material that penetrates rain drops and adheres to foliage, buds or fruit both *during and after* the rain. With a Niagara orchard duster and Kolodust you are no longer at the mercy of the weather.

Kolodust is absolutely safe, permits your trees to function normally, producing finer fruit finish and more buds for next year's crop.

And Kolodust goes on *fast*. With a powerful Niagara Liqui-Duster you can Kolodust a large acreage of orchards in a very short time. Remember, you can Kolodust when bad weather bogs down heavy sprayers and keeps them in the barn!

So stop scab troubles before they can start—this spring, and every spring from now on. KOLODUST in the rain for *real* scab protection when you need it most. With such "on-the-nose" timing, you'll profit in bigger, finer packs of more profitable fruit!

50
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ORCHARD DUSTERS

Niagara Chemical Division

FOOD MACHINERY AND CHEMICAL CORPORATION

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FRIEND AIRMATE Blower delivers over 32,750 cu. ft. of air a minute with a 36 inch axial flow fan that thoroughly covers every tree — all the way through and all the way up. There are no "dead spots" with AIRMATE. You're sure of a cleaner crop . . . and premium prices.

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- ★ **package unit** . . . AIRMATE is delivered complete with valves, filters, connection hoses. NO extras to buy.
- ★ **remote control** . . . easy-to-operate control valves make for simplified, one-man automatic operation.
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- ★ **versatile** . . . adjustable deflectors for one or two-way spraying. And AIRMATE handles all types of sprays — dilute or concentrate.

and then COMPARE. You'll agree — AIRMATE is your best buy.

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SPRAY THINNING APPLES

New material gives good results
with less injury to the leaves

BY D. D. HEMPHILL
Missouri Experiment Station

SPRAY thinning of apples perhaps can now be considered a standard orchard practice with Missouri growers. There still is much to be learned, however, concerning the effects of the numerous environmental factors on the thinning mechanism of the various chemicals.

The mechanism of thinning by caustic materials such as the dinitros has been understood for some time, but it has been only during the last few months that well-documented evidence as to the mechanism of thinning by naphthaleneacetic acid has been presented.

Advantages of Spray Thinning

It is difficult to estimate the value of proper chemical thinning. The saving of \$35 to \$50 per acre in labor costs over hand thinning and the rapidity of carrying out the operation are just two and probably not the most important benefits derived from chemical thinning.

It has been found that chemically-thinned trees are able to carry a heavier load of fruit to proper maturity. Excess fruits are removed early before they have had time to sap the stored reserves of the tree. All this stored food that would normally be thrown away in the form of "thinned fruit" can go into the production of marketable fruit. *Final size and yield of fruit from chemically-thinned trees usually will be greater than that of hand-thinned trees.*

Another important benefit of chemical thinning is its effect on alternate or biennial bearing. Many Missouri growers are now getting annual crops on such persistent alternate bearers as Golden Delicious and York. This has not been possible by hand thinning. It has been shown experimentally that in most cases excess fruit must be removed within three or four weeks after bloom if the tree is to come back with sufficient bloom for a crop the following year. Hand thinning is difficult if not impossible to accomplish within this period.

Important Developments

In early experiments in chemical thin-

AMERICAN FRUIT GROWER

ning highly caustic materials such as cresylic acid and tar oil distillates were employed. Such chemicals were applied in the cluster bud or early pink stage of flower development. The more advanced flowers were killed while those less advanced escaped thus giving a reduced set of fruit. This treatment gave such a severe shock to the trees that they did not always produce flower buds for next year's crop.

An important step forward was made with the use at full bloom or slightly later of less caustic chemicals in the form of dinitro chemicals (sold under the trade names of Elgetol, DN No. 1, Krenite, etc.).

The next important step was the discovery that naphthaleneacetic acid (the preharvest spray material) could thin young fruits when applied as late as two weeks after bloom. This gave the grower time to determine how heavy fruit set would be, timing was not so critical, and there was less shock to most varieties by this material.

Unfortunately, however, it caused severe foliage injury in some cases, the severity depending on variety, time of application, concentration, and environmental factors. Concentrations required to thin most early summer varieties caused excessive foliage or fruit damage.

The most recent development has been the discovery that foliage injury caused by naphthaleneacetic acid can be markedly decreased by the use of naphthylacetamide (sold under the trade name of Amid-Thin).

Use of Dinitros

In general, dinitro compounds do not give as satisfactory thinning under conditions found in midwestern and eastern sections as it does in the Northwest. However, these compounds can be used

(Continued on page 38)



Branches of apples from adjoining trees. Left—
not thinned; right—chemically thinned.

FEBRUARY, 1954



Yellow Transparent untreated



Yellow Transparent treated
with ACP AMID-THIN

Announcing a safe material for apple thinning

ACP AMID-THIN

(Naphthylacetamide)

Recent field tests with Yellow Transparent, Duchess, Early McIntosh, Wealthy, McIntosh, Cortland, Rhode Island Greening, Baldwin, Rome, Northern Spy, Jonathan, Red Delicious, Golden Delicious, Grimes Golden, Macoun and Gravenstein have shown that this material does not cause injury to foliage at concentrations necessary for thinning, and therefore results in a leaf-fruit ratio more favorable to fruit bud formation the following year.

This material is applied at petal fall, and therefore thinning fruit at this early stage of development increases the size of the remaining fruit.

Another advantage in using this material is its wide range of safety, from the standpoint of overthinning. In our field tests to date we have not overthinned at high concentrations.

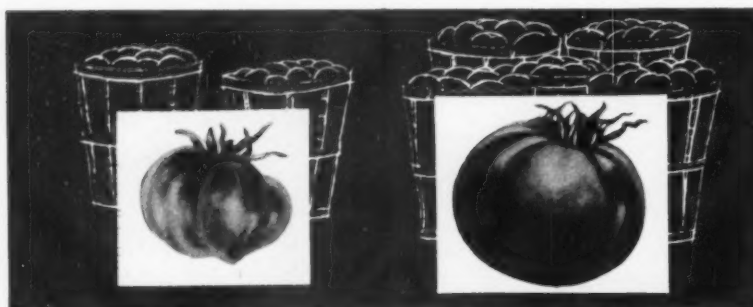
Available for limited use this year. Consult your local agricultural authority.

AMERICAN CHEMICAL PAINT CO., AMBLER, PA. • NILES, CALIF.

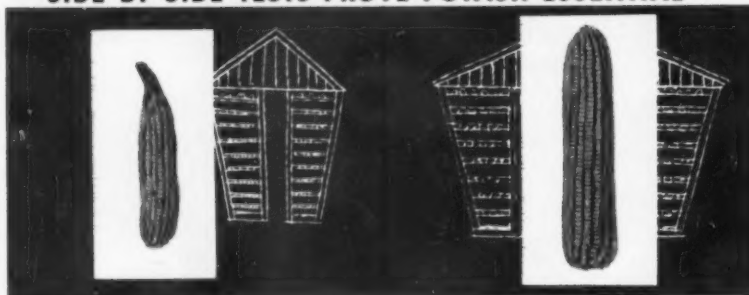
AGRICULTURAL CHEMICALS DIVISION

Originators of 2,4-D and 2,4,5-T Weed Killers





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Your Profit Picture. In a period of rising costs, *more efficient use of land, labor and machinery is a must.* Producing more for less is the key to present and future profits. That's why Potash is so essential. Used liberally, Potash **LOWERS YOUR UNIT COSTS OF PRODUCTION, saves on labor, helps you earn higher profits per acre.**

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CHEMICAL THINNING

(Continued from page 37)

to very good advantage in many cases.

To get satisfactory thinning, timing is important. Success with this method is based on the thesis that fertilization of a portion of the flowers (preferably the "King" flower of most of the clusters) will be permitted while fertilization of flowers which open later will be prevented by the dinitro which has a caustic action on the pollen and on the stigmatic surfaces of the flower.

When a period of two or more days elapse from first to full bloom excellent results are obtained. In Missouri trees may come into full bloom practically "overnight" and proper timing of the spray cannot be achieved in such cases.

When conditions have permitted, dinitros have been used to good advantage in "breaking up" the clusters of such varieties as Golden Delicious followed by naphthaleneacetic acid 10 to 14 days after full bloom if additional thinning is needed.

For biennial bearers in the "on" year, two to three pints Elgetol (20 per cent) or three-fourths to one pound of DN-No. 1 to 100 gallons on the first day of full bloom has given most satisfactory results.

For annual bearers, one to one and one-half pints Elgetol (20 per cent) or one-half to three-fourths pound DN No. 1 in 100 gallons applied two to three days after full bloom has produced most satisfactory results.

Use of NAA

Naphthaleneacetic acid has been preferred to dinitros in the Midwest and East for the most part because it gave the grower time to observe the amount of fruit set before using a thinning spray, timing was less critical and there was less injury, seemingly, to the tree.

In the use of naphthaleneacetic acid it was found that a number of environmental and physiological factors have an important influence on the action of the chemical, and consequently the amount of thinning by a given concentration was difficult to predict.

Varieties differ markedly in their susceptibility to thinning—Jonathan, Delicious, and Winesap are very sensitive while Golden Delicious, Duchess, and Wealthy are difficult to thin.

Cool, rainy weather during bloom frequently results in poor pollination with subsequent overthinning by thinning sprays, resulting in a reduced fruit crop.

Vigor of tree, condition of foliage the previous season, nitrogen supply, and amount of pruning affect amount of thinning by this chemical.

Knowing the history of every tree in the orchard helps the grower to do a better job of thinning also. One of the largest and best growers in Missouri keeps a record

AMERICAN FRUIT GROWER

of the production of each tree and the type of chemical thinning treatment the tree has received.

The amount of spray applied is as important as the concentration. Those parts of the tree which have the heaviest set of fruit should receive the most spray. There is a tendency to over-thin the lower limbs while the top of the tree is under-thinned.

Jonathan, Delicious, and Winesap can be thinned usually by 10 parts per million (p.p.m.) of naphthaleneacetic acid while Golden Delicious, York, Duchess, and Wealthy require 20 p.p.m. with respraying sometimes necessary.

Naphthylacetamide

As a result of the discovery that thinning of the young fruit could be accomplished with the amide derivative of naphthaleneacetic acid without the dwarfing and "flagging" foliage effects, most Missouri growers used Amid-Thin on all or a portion of their orchard this past season. Results were satisfactory for the most part and it appears that increasing amounts of this chemical will be used, and it could possibly completely replace dinitros and naphthaleneacetic acid.

The most important differences in the use of naphthaleneacetic acid and naphthylacetamide appear to be in concentration and timing of the spray. Jonathans can be thinned with 10 p.p.m. of naphthaleneacetic acid whereas 30 to 40 p.p.m. of naphthylacetamide are required.

Equally as good thinning and a minimum amount of foliage injury resulted by application of naphthaleneacetic acid 10 to 14 days after full bloom. Two years' results in New York indicate that most satisfactory thinning results from applications made at petal fall (90 per cent of petals off) or even early petal fall (10 per cent of petals off).

In Missouri the naphthylacetamide was applied 10 to 14 days after bloom and we do not have any reliable data indicating its effectiveness when applied at different stages after bloom. The picture in Missouri was further complicated by the fact that most varieties failed to set a full crop of fruit, most likely as a result of cold damage.

According to the best information available, Yellow Transparent, Duchess, and Jonathan can be thinned by 30 to 40 p.p.m. naphthylacetamide (one to one and one-half pints Amid-Thin in 100 gallons) applied at petal fall. Delicious, Cortland, McIntosh, and Golden Delicious can be thinned by 40 to 50 p.p.m. applied at petal fall, while Wealthy and Rome require 50 p.p.m.

Without doubt this will vary somewhat depending upon local conditions, and the experience of growers and experiment station workers in your area should be followed.

THE END

**"If I were purchasing
a new machine, I would
consider no other"**



**CARDOX
AQUA-JET
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"I have used various types of orchard sprayers prior to the purchase of my Cardox Sprayer. Its features are too numerous to mention. If I were purchasing a new machine, I would consider no other."

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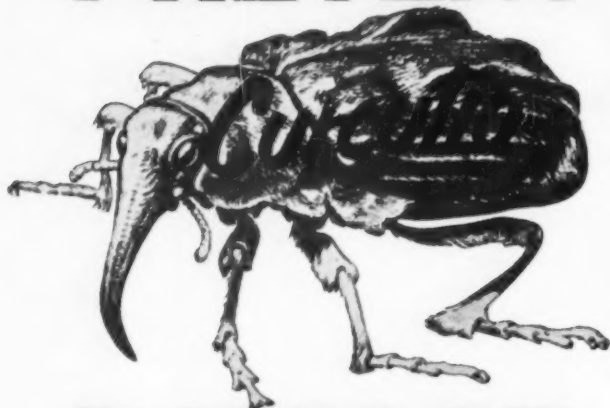
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Methoxychlor Insecticide

Dependable "Marlate" gives consistently high kill of curculio. It prevents egg-laying scars and feeding punctures—gives protection early and late in the season. When you use "Marlate" for curculio, you get top control of codling moth, too.

Gives fine-fruit finish

"Marlate" contributes to fine-fruit finish. When used in combination with "Fermate" or other organic fungicides, russetting and other chemical injury are no problem.

Minimum residue hazards

In late sprays for apple maggot, "Marlate" provides protection close to harvest, yet presents no problem to the persons who eat the fruit. This characteristic of "Marlate" is also a great advantage for insect control on vegetables and forage crops.

For cherry fruit fly . . . there's nothing better than "Marlate." From egg-hatching time till close to cherry harvest, "Marlate" gives excellent kill with no injury or effect on vegetative growth.

See your supplier now for "Marlate" 50% technical insecticide. It will pay you well to use "Marlate" this season.

On all chemicals always follow directions for application. Where warning or caution statements on use of the product are given, read them carefully.



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

MARLATE

Methoxychlor Insecticide

Keep Your Eye on PESTICIDE

**New residue tolerances may
be established this year**

THE chances are very good that the Pesticides Residue Amendment to the Federal Food, Drug and Cosmetic Act will be considered in this session of Congress. The effect of this legislation on fruit growers is indirect but important. This bill (H. R. 4277), introduced in the last session of Congress, deals with the residues of farm chemicals on food crops.

Just before Congress adjourned, the House Interstate and Foreign Commerce Committee held a hearing on this bill and during this hearing many representatives of farm organizations, land grant colleges, the Food and Drug Administration, and the pesticides industry either appeared before the committee or made depositions to present their opinions.

Included among those farm groups which endorsed the principles of the bill are the American Farm Bureau Federation, the National Grange, the National Apple Institute, the International Apple Association, and the New York State Horticultural Society.

Principal Features

In brief, some of the principal features of this legislation which in our estimation make it a worthwhile approach to regulating pesticidal residues are: 1) It treats pesticides separately from chemical additives used in the processing of foods; 2) it treats the use of chemicals as they are used on the farm; 3) it simplifies the costly procedure to establish the pesticidal residue tolerances which are now necessary under the present law; 4) it requires the issuance of these pesticidal residue tolerances within a reasonable length of time after request for a tolerance is made.

Fundamentally, the adoption of this amendment to the Federal Food and Drug Act will not change agricultural practices used by fruit growers; but it can heighten the responsibility of the farmer to follow directions for use of these products, carefully, in order to avoid seizure of fruit due to excessive residues of pesticides.

The burden of establishing the method of use of these products will still remain with the manufacturer who must register his label with the USDA if he sells his pesticides in interstate commerce.

Greater Protection

Under the present law there has been no residue tolerances established for the

AMERICAN FRUIT GROWER

LEGISLATION

By LEA S. HITCHNER

National Agricultural Chemicals Association

newer chemicals and the fruit grower is in a vulnerable position because he does not know the maximum amount of residues, if any, which are permitted to appear on his fruit when that fruit is sold across state lines. If the proposed amendment, sometimes called the Miller Bill, is adopted, the fruit grower will be able to obtain greater protection against the seizure of his fruit crop because it will establish these residue tolerances as guides upon which spraying and dusting operations can be based.

We expect this amendment to the Federal Food, Drug and Cosmetic Act to be reported favorably by the House Interstate and Foreign Commerce Committee. If the bill becomes law, it will require a considerable length of time to place into effect; consequently, the new law will not affect the marketing of fruits during the 1954 season.

There is a possibility, however, that if this amendment is adopted during 1954, effective enforcement of the provisions of this amendment can take place during the 1955 season.

We believe that this amendment will do away with a great deal of the confusion regarding the use of pesticides in agriculture and that it is a bill under which fruit growers and other producers can operate with more confidence. The continued support of all phases of agriculture is necessary in order to bring this bill to a vote in Congress and to effect its favorable reception.

THE END

Fruit Production at a Glance

	Average 1942-51	1952	USDA Jan. 1, Est. 1953
Oranges			
Calif., all	46,265	45,530	37,300
Navels & Misc.	16,841	16,630	14,400
Valencias	29,424	28,900	22,900
Florida, all	55,080	72,200	82,000
Temples	924*	1,700	2,000
Early & Mid- season	29,231	40,600	45,000
Valencias	25,110	29,900	35,000
Other States	4,665	1,950	2,550
Total Early & Midseason	49,746	60,080	63,025
Total Valencias	56,284	59,600	58,825
Tangerines	4,340	4,900	5,200
Grapefruit			
Florida	29,820	32,500	36,500
Texas	15,342	400	1,100
Other States	6,084	5,460	5,260
Lemons	12,722	12,590	13,000

*Short-time average.



If you're using "Fermate,"
you're getting all these

Profit-Building Benefits

1. Higher yields—As much as 60 boxes per acre more good fruit than with any other fungicide. According to 5-year experiment-station tests, yields averaged 210 boxes more per acre with "Fermate" than with sulfur.

2. Better disease control—Eleven years of use and experiment-station tests show "Fermate" controls more diseases than any other fruit fungicide. On apples, "Fermate" controls scab, cedar-apple rusts, bitter rot, black rot and blossom-end rot, sooty blotch and fly speck, apple blotch and Brooks spot.

3. Healthier trees—"Fermate" is a mild fungicide that lets trees grow normally, killing off diseases without chemical burn. Trees show gains each year in vigor, foliage, bloom and fruit set.

4. Better fruit finish—"Fermate" doesn't burn or scald fruit, helps prevent blemishes. Keeps apples firm with good storing qualities.

Yes, "Fermate" gives proof, not promises, of outstanding disease control and improved orchard productivity. Use "Fermate" this year and get all these benefits.

On all chemicals always follow directions for application. Where warning or caution statements on use of the product are given, read them carefully.



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Planning to buy a mist sprayer?



IRON AGE features will save you time, labor, and spray materials!

If you're in the market for a mist sprayer, you must have specific reasons for wanting one. Whatever your reasons, you'll find Iron Age is the best spraying investment you can make.

LOOKING FOR CONVENIENCE? Iron Age is easy to handle (its light weight permits close quarter work as well as early spraying on soft ground), with controls conveniently located within reach of driver . . . makes spraying a one-man operation.

WANT TO SAVE TIME? Double blowers spray from either or both sides of the machine at the same time . . . capacity up to 19,000 cu. ft. per min. . . . velocity up to 110 mph.

CONCERNED WITH PERFORMANCE? Sprayer features famous Iron Age Pump with nozzles specially designed to deliver proportionate air volume to top and bottom branches. Pump nozzles combined with a powerful fan give thorough penetration and complete coverage without defoliating.

INTERESTED IN MORE PROFIT? You save on repairs because the Iron Age Pump is totally enclosed and sealed for years of trouble-free service . . . you save because Iron Age uses less spray material. And fruit sprayed by Iron Age develops a firmer stem, has less dropage, gives a higher profit on the crop.

For more information about Iron Age Mist Sprayers and what Iron Age features can do for you, mail the coupon below today. You'll be glad you did.



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PESTICIDE AND BRAND NAMES MANUFACTURER

ALDRIN
Aldrin.....Shell
Black Leaf Aldrin.....Black Leaf Products
Niagara Aldrin.....Niagara
Orchard Brand Aldrin.....General Chemical
Ortho Aldrin.....Calif. Spray-Chemical

ARAMITE
Aramite.....U. S. Rubber
Black Leaf Aramite.....Black Leaf Products
Chipman Aramite.....Chipman
Geigy Aramite.....Geigy
Niagara Aramite.....Niagara Chemical
Orchard Brand Aramite.....General Chemical
Ortho-Mite.....Calif. Spray-Chemical
Penco Aramite.....Pennsylvania Salt
Stauffer Aramite.....Stauffer

BHC
Benzahex.....Chipman
Benzex.....Woolfolk
BHC 10 Spray.....Niagara
Black Leaf BHC.....Black Leaf Products
Gammicide.....Calif. Spray-Chemical
Gamtox.....Calif. Spray-Chemical
Hexadow.....Dow
Hi-Gam.....Pennsylvania Salt
Isotox.....Calif. Spray-Chemical
Lezone.....DuPont
Lintox.....Stauffer
Orchard Brand BHC.....General Chemical
Penco BHC.....Pennsylvania Salt

CAPTAN
Orthocide.....Calif. Spray-Chemical
Stauffer Captan.....Stauffer

CHLORANIL
Spargon.....U. S. Rubber

CHLORDANE
Black Leaf Chlordane.....Black Leaf Products
Chipman Chlordane.....Chipman
Chlordane.....Stauffer
Chlor Kil.....Niagara
Corodane.....Pittsburgh Plate Glass
Ortho-Klor.....Calif. Spray-Chemical
Pratts Chlordane.....B. G. Pratt
Synklor.....U. S. Rubber

DDD (TDE)
Niagara DDD.....Niagara
Orchard Brand TDE.....General Chemical
Orthene.....Calif. Spray-Chemical
Rhothane.....Rohm & Haas

DDT
Black Leaf DDT.....Black Leaf Products
Chipman DDT.....Chipman
DITOL.....Sherwin-Williams
D-50 Wettable.....Rohm & Haas
Deenate.....DuPont
Genitol.....General Chemical
Genitox.....General Chemical
Niatox.....Niagara Chemical
Penco DDT.....Pennsylvania Salt
Pentech.....Pennsylvania Salt
Persiste.....Calif. Spray-Chemical
Pratts DDT.....B. G. Pratt
Santobane.....Monsanto
Vapona.....Shell

DEMETON
Systox.....Chemagro
Systox.....Dow

DICHLONE
Black Leaf Phylon.....Black Leaf Products
Kolo 100.....Niagara
Phylon.....U. S. Rubber

DIELDRIN
Black Leaf Dieldrin.....Black Leaf Products
Chipman Dieldrin.....Chipman
Dieldrin.....Shell
Orchard Brand Dieldrin.....General Chemical
Ortho Dieldrin.....Calif. Spray-Chemical

DINITROS-DORMANT
Corodino.....Pittsburgh Plate Glass
Dinitro Dry.....Niagara
DN Drymix #1.....Dow
DN Drymix #2.....Dow
DN-289.....Dow
Elgetol 30.....Standard Agri. Chem.
Elgetol 318.....Standard Agri. Chem.
Krenite 26.....DuPont
Nitro Vaporol.....Calif. Spray-Chemical

DINITROS-SUMMER
DN-111.....Dow

ENDRIN
Black Leaf Endrin.....Black Leaf Products
Endrin.....Shell
Endrin.....Velsicol

EPN
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Black Leaf Ferbam	Black Leaf Products
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Ferramate	DuPont
Ferradow	Dow
Karbam Black	Sherwin-Williams
Nu-Leaf	Calif. Spray-Chemical
Orchard Brand Ferbam	General Chemical

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Genite 883	General Chemical
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HEPTACHLOR

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Chipman Heptachlor	Chipman
Heptachlor	Velsicol
Ortho Heptachlor	Calif. Spray-Chemical

LINDANE

Black Leaf Lindane	Black Leaf Products
Chipman Lindane	Chipman
Isotox	Calif. Spray-Chemical
Niagara Lindane	Niagara
Orchard Brand Lindane	General Chemical
Penco Lindane	Pennsylvania Salt
Pratts Lindane Spray	B. G. Pratt

MALATHION

Black Leaf Malathion	Black Leaf Products
Malathion	American Cyanamid
Malathion 50 Spray	Niagara
Orchard Brand Malathion	General Chemical
Ortho Malathion	Calif. Spray-Chemical
Penco Malathion	Pennsylvania Salt
Pratts Malathion Spray	B. G. Pratt

MANEB

Manzate	DuPont
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METACIDE

Metacide	Chemagro
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METHOXYCHLOR

Chipman Methoxychlor	Chipman
Marlate	DuPont
Methoside	Niagara Chemical
Orchard Brand Methoxychlor	General Chemical
Orthotox	Calif. Spray-Chemical

ORGANO-MERCURY

Coromerc	Pittsburgh Plate Glass
Puritized Agricultural Spray	Gallowhur
Puritized Apple Spray	Gallowhur
Tag	Calif. Spray-Chemical

OVOTRAN

Orthotran	Calif. Spray-Chemical
Ovotran	Dow

PARATHION

Black Leaf Parathion	Black Leaf Products
Chipman Parathion	Chipman
Corothion	Pittsburgh Plate Glass
Genithion	General Chemical
Niran	Monsanto
Orthophos	Calif. Spray-Chemical
Panthon	Woolfolk
Paradust	Stauffer
Penco Parathion	Pennsylvania Salt
Phos Kil	Niagara
Vapophos	Calif. Spray-Chemical

QUATERNARY AMMONIUM COMPOUNDS

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QUINONES

Black Leaf Phygon	Black Leaf Products
Kolo 100	Niagara
Phygon	U. S. Rubber
Spergon	U. S. Rubber

TEPP

Black Leaf TEPP 40	Virginia-Carolina
Mulsifos	Woolfolk
Nifos-T	Monsanto
Niagara TEPP	Niagara
Orchard Brand TEPP	General Chemical
Pyfos	Woolfolk
Vapotone	Calif. Spray-Chemical

TOXAPHENE

Alltox	Calif. Spray-Chemical
Black Leaf Toxaphene	Black Leaf Products
Chipman Toxaphene	Chipman
Geniphene	General Chemical
Penco Toxaphene	Pennsylvania Salt
Toxakil	Niagara

UREA

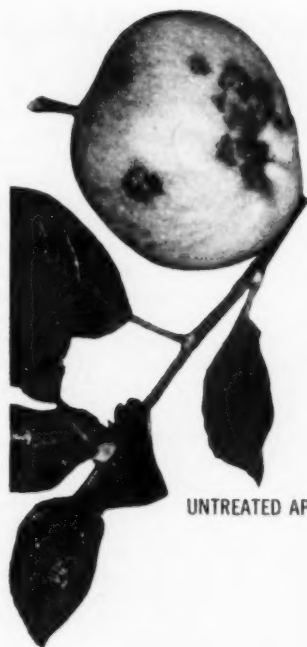
NuGreen	DuPont
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ZINEB

Dithane Z-78	Rohm & Haas
Ortho Zineb	Calif. Spray-Chemical
Parzate	DuPont
Thiodow	Dow

ZIRAM

Corozate	Pittsburgh Plate Glass
Karbam White	Sherwin-Williams
Opalate	Calif. Spray-Chemical
Orchard Brand Ziram	General Chemical
Z-C Spray	Niagara
Zerlate	DuPont



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More and better
apples and peaches
with **PHYGON-XL!**



TREATED WITH PHYGON-XL,
THE ORCHARD FUNGICIDE

Bushels of
extra dollars
for you!

It costs but a few cents per tree to apply Phygon-XL, for it's the *least expensive organic fungicide* you can use. But more important, you'll market far more *1 apples for far greater profits. Phygon-treated apples ripen more uniformly. You'll have fewer "rejects" because Phygon-XL, when properly applied, gives you almost 100% apple scab control.

Besides apple scab, Phygon-XL effectively controls bitter rot of apples and peaches, California blight of peaches, brown rot and blossom blight of peaches, peach leaf curl and many other fungus diseases. Phygon-XL is simple to apply. It mixes effectively with the most commonly used fungicides and insecticides, is harmless to pollen and bees and does not affect odor or flavor of the fruit.

Order Phygon-XL or formulations containing Phygon from
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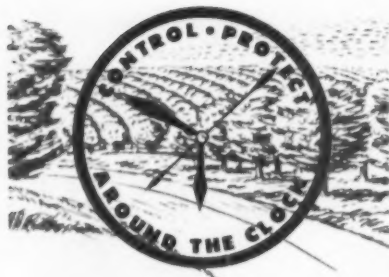


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ELM STREET, NAUGATUCK, CONNECTICUT

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With Tennessee's COPPER FUNGICIDES!

Increase Your Yield!

Insist on TC copper-based fungicides for your most effective control of blight and other persistent fungus diseases. Spraying early and late with one of these superior fungicides will reward you with higher yields and better quality fruits. There's a TC copper-based fungicide for virtually every need.



Tri-Basic Copper Sulphate is a chemically stable copper fungicide containing not less than 53% metallic copper. TRI-BASIC Copper Sulphate can be used as a spray or dust on practically all truck crops and citrus crops. Control persistent fungus diseases—correct copper deficiencies from a nutritional standpoint. Use TC TRI-BASIC Copper Sulphate.

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LOOKING AHEAD

(Continued from page 15)

The 17-year locust, or periodical cicada, appeared in the East according to schedule. Some young orchards were badly damaged. One investigator reported over 4,500 egg slits in the twigs of one young tree. For recently planted trees the best protection was by the use of tobacco shade cloth. In one case the cost was estimated at about 20 cents per tree. Where nearby reinfestation sources were not present, sprays of TEPP gave good control. Much less benefit was gained when the trees were close to heavily infested woodland. Fortunately, this large brood won't appear again for 17 years.

In the control of the peach tree borer increasing use is being made of the trunk sprays, instead of the former standard treatment of the soil around the base of the tree with paradichlorobenzene or ethylene dichloride. DDT, parathion, benzene hexachloride, and EPN have all given good results as trunk sprays in one or more localities. The schedule followed, the material used, and its strength, vary with the locality, and detailed information should be obtained from the grower's state agricultural experiment station or extension service.

Now to look ahead a bit. Although by and large the fruit insect control situation is now reasonably satisfactory, complacency is definitely not in order. The cost of controlling fruit insects is still too high—\$50 to \$75 an acre or more annually—in spite of a definite saving in the Northwest resulting from the switch from lead arsenate to DDT. The new organic insecticides are costly, and some of them dangerous to handle.

On the basis of past experience it is safe to say that the insect control situation will not become static. Insect problems have a way of changing from time to time, often becoming more difficult. Changes in orchard practices sometimes favor the insects. New insect pests often appear or old ones suddenly assume greater importance.

Resistance of Insects

Not the least of the possible problems ahead is the danger that resistance to insecticides will increase and involve a wider range of pests. Some hints of this have already appeared. Mention has already been made of the suspicions pointed at the codling moth. One of the common leafhoppers on apple in the Middle West suddenly became just about uncontrollable with DDT last season, after being readily controlled by the same material for several years. Leafhoppers on grapes in California, and on cranberries in Massachusetts, seem to be going the same way. Also on cranberries in Massachusetts the black-headed fireworm seems to be develop-

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AMERICAN FRUIT GROWER

ing resistance to DDT. For several years some strains of orchard mites have been resistant to parathion.

Basic studies of resistance are under way, but much more of this work will be needed before it will be known just what happens inside an insect that causes it to become resistant. In the meantime, the practical problems can usually be met, for the time being at least, by a shift to another insecticide.

As time goes on we will hear more about the so-called systemic insecticides, which enter the plants and cause the death of insects feeding on them. The plant can absorb the materials through the leaves, and will also take certain of them from the soil, without any above-ground application. Much remains to be learned about the systemic insecticides and how they work. The nature of the poison present in the plant is unknown. It is poisonous to insects; how safe is it to human beings? The systemics seem to show the greatest promise for plant lice, scale insects, and certain other sucking insects, although some good results have been obtained with other types of insects.

Problems of residues and other side effects of the use of insecticides will receive more attention as time goes on. Unfortunately the public is being given the impression that recent increases in the incidence of various diseases have been the result of the increase in insecticide usage that has occurred during the same period. Proof or disproof of such conclusions is very hard to get; present evidence does not appear at all conclusive. The development of insecticides that, from the standpoint of the operator, will be safer than the phosphate materials is also most desirable.

Thorough Testing

It is safe to predict that new insecticides will continue to appear and will displace in part the older insecticides. Present labeling and registration requirements are quite exacting. Before an insecticide is ready for commercial adoption there must not only be assurance that it will be effective when used as recommended but also assurance that its use will not result in residues harmful to the consumer, and will not have an unfavorable effect on the flavor or quality of the fruit. These requirements slow up the movement of insecticides into commercial use.

Probably because an entomologist is accustomed to thinking of problems and how to solve them, I have dwelt at some length on difficulties that may be ahead. However, we do not consider any of them insoluble; the fruit industry has always been resourceful and ingenious in meeting its difficulties. Working with the entomologists, insecticide chemists, and scientists in related fields the industry will continue to solve its insect control problems in an effective manner.

THE END

FEBRUARY, 1954

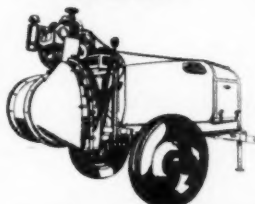


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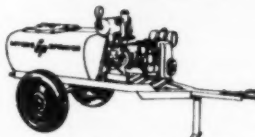
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filters are easily replaced, and fit in-use M.S.A. Farm Spray Respirators. Strong, non-clogging exhalation valve prevents leakage on inhalation. Accepted by U. S. Government Interdepartmental Committee on Pest Control. Get all the facts, write for bulletin.

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COMES OF AGE

(Continued from page 17)

three and one-half miles per hour, good uniform coverage was obtained throughout the trees. When the concentration was increased to 6x using one-eighth gallonage and the rate of travel maintained at three and one-half miles per hour, the coverage was weak in the top central portions of the sprayed trees. This weakness was corrected by reducing the rate of travel to two and one-half miles per hour.

With small air-blast sprayers and air-blast attachments, satisfactory coverage may be obtained on large, well-pruned apple trees by reducing the ground speed to one and one-half to one and three-fourths miles per hour and by using concentrations no higher than 2x. It is recognized generally that concentrate spraying is most effective when applications are made when atmospheric conditions are favorable for good coverage. This means spraying in the evening, at night, and early in the morning when there is little or no wind.

Midwestern fruit growers are changing very rapidly to this relatively new method of spraying and with very few mishaps. It is being accomplished by starting with concentrations of 2x or 3x and then changing to the higher concentrations only if the spray equipment is adequate. It is this methodical approach that has made the change from conventional spraying to concentrate spraying successful. **THE END**

CUT COSTS

(Continued from page 18)

been so encouraging that the officially recommended dosage of DDT wettable powder, for example, may shortly be reduced from 12 pounds per acre to six pounds, plus a specified additive. This change would have three-fold significance. It would mean a reduction in DDT dosage of about 75 per cent since the days of high-volume spraying, and, consequently, annual savings of hundreds of thousands of dollars to the fruit growers. It would greatly lessen the danger of insecticidal soil poisoning. It would overcome unsightly spotting of fruit from excessive spray deposits in the lower parts of the trees.

While extensive field trials on reduced DDT dosage are being carried out in 1954, parallel trials will be underway with other types of insecticides and fungicides. There seems no reason to doubt that what can be done with DDT concentrate can be done with other wettable powders. Suitable modification of contact mixtures such as lime-sulfur concentrate, or dormant oil—lime-sulfur concentrate, may take longer. But, at the rate entomological-chemical research is moving these days, it will be surprising if it is not accomplished within a few years. **THE END**

AMERICAN FRUIT GROWER

DISEASE CONTROL

(Continued from page 26)

cherry leaf spot fungus. In some sections an 8-8-100 Bordeaux mixture or eight pounds of copper sulfate in 100 gallons of water applied just after leaves drop is reported to aid the control of peach bacterial spot. Occasionally apple growers use Bordeaux mixture as a substitute for lime sulfur in the delayed-dormant or prepink applications for control of the apple scab fungus. A weak Bordeaux mixture (three-fourths pound of copper sulfate and three pounds of lime per 100 gallons of water) is a cheap mixture for use in midsummer cover sprays on apples that are to be processed. Because of its tendency to russet the fruit Bordeaux mixture has largely been supplanted by the organic fungicides as a spray for apples that are to be sold as fresh fruit.

Dithiocarbamates. While ferbam is still the standard organic material for the control of the cedar-apple and quince rusts, experiments with zineb and manzate (zinc and manganese ethylene bisdithiocarbamate, respectively) indicate that these compounds too may be of value in rust control. There is a definite trend away from ferbam alone or combined with sulfur for control of the apple scab fungus. Results obtained in 1953 were similar to those obtained in 1952 and indicate that other organic materials are now available that have a better eradicated action on the apple scab fungus than ferbam or the ferbam-sulfur combination.

As mentioned earlier the ferbam-sulfur combination is still being used on apples that are to be processed, i.e., fruit on which finish is not of paramount importance. Several years ago it was suggested that ferbam might retard the cracking of Stayman apples. Subsequent experiments disproved this and it is now considered that the ferbam-sulfur combination should not be used on the Stayman variety if the fruit is to be packed and sold as fresh fruit.

Phenyl Mercury Compounds. Because of the lack of protective or residual action, these potent fungicides were rarely used alone in 1953. Commercial practice during the past season further substantiated the view that some protective fungicide must be used with the mercury compounds if adequate control of the apple scab fungus is to be achieved. Combinations of organic mercury compounds with glyodin or with captan gave outstanding control of the apple scab fungus in 1953. In such combinations the mercury preparations are used at one-third to one-half normal strength with the other component of the mixture at one-half the recommended dosage.

The mercury compounds have also been used in combination with sulfur,

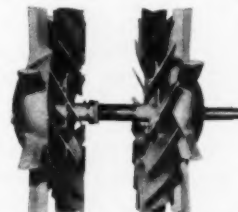
(Continued on page 48)

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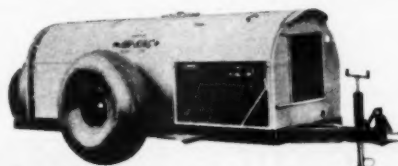


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DISEASE CONTROL

(Continued from page 47)

with ferbam, and with dichlorone. It is now generally recognized that the mercury materials, even at reduced strength combined with other fungicides, may be phytotoxic during periods of high temperatures. The use of mercury compounds after the petal-fall spray is not recommended.

Captan. Another year's experience with this compound by commercial apple growers further demonstrates its value in the production of russet-free fruit. At the same time the early scab infection period in 1953 demonstrated that captan was not a particularly effective eradicator compound. However,

HANDY ANDY



Fred Larsen, Carroll County, New Hampshire, likes homemade plywood cut-outs to help him sell fruit. This large apple cut-out of plywood is painted with realistic colors and when it is outside his packing plant, folks know that Larsen has apples to sell.
—Charles L. Stratton

combinations of captan and organic mercury preparations proved to be very efficient mixtures for control of primary scab infections.

In orchards where the scab fungus was well established it was noted that two pounds of captan to 100 gallons of water in the cover sprays stopped the further development of the fungus, whereas, one pound in 100 gallons of water failed to stop secondary infections on the leaves and considerable defoliation resulted. In Virginia it was noted that captan caused a mild spotting of the leaves of the Delicious variety.

The dry weather during the summer of 1953 retarded the development of sooty blotch, flyspeck, and Botryosphaeria rot to such an extent that the effectiveness of captan against the fungi that cause these diseases could not be evaluated. Experiments with captan as a spray for peaches in South Carolina indicated that it was non-phytotoxic and controlled the scab and brown rot fungi as efficiently as the standard sulfur sprays. The difference in cost, however, precludes any extensive use of

AMERICAN FRUIT GROWER

captan as a substitute for sulfur in peach spraying operations.

Dichlone. This is the recently coined name for the material long known as Phygon. This compound continues to be an extremely effective fungicide. However further experimentation indicates it is most useful in the northern and cooler portion of the apple growing belt. Its use in the southern part of the apple belt has at times resulted in rather objectionable chlorosis of the leaves. Reports from Pennsylvania indicate that the addition of one-half pound of dichlone to the regular sulfur sprays gives much better control of blossom blight of peaches due to the brown rot fungus than is obtained with the same quantity of sulfur alone.

Glyodin. This is another coined name to be learned by the fruit grower. This name is used for the glyoxalidine acetate preparation known to many fruit growers as Crag Fungicide 341SC. Glyodin combined with phenyl mercury compounds was used effectively as a combined eradivative-protective spray in many apple orchards in the East. The mixture was of particular value in destroying the primary infections of scab established during an early infection period before most growers had applied any sprays. Glyodin continues to be used for control of the cherry leaf spot fungus. It was tested on peaches in South Carolina in 1953 as a possible substitute for sulfur and, while it controlled the fungi, its possible value as a substitute material is doubtful since it caused injury to the fruit.

Compatibility Problems

Commercial use of mixtures of organic mercury compounds with other organic and inorganic fungicides is now a standard practice. These mixtures are apparently compatible and non-phyto-toxic when used on apples. Growers must remember, however, that the effect of these mixtures applied together is quite different from their use separately in consecutive sprays. Mercury-ferbam combinations, for example, produce no injury, but mercury compounds alone should never be used on apple trees recently sprayed with ferbam. Very severe injury may follow such a procedure.

The main compatibility problem that developed in 1953 concerns the marked increase in the prevalence of the peach scab fungus. Many investigators attribute this increase to the substitution of organic insecticides without lime for the long used arsenate-of-lead-lime insecticide combination. The evidence to support this contention is not entirely clear-cut for spray experiments in South Carolina with sulfur-arsenate-of-lead-lime and sulfur-parathion gave excellent peach scab control with both combinations. Definite experiments are planned to investigate this problem in 1954.

THE END

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TAYLOR INSTRUMENTS
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CALENDAR OF COMING MEETINGS AND EXHIBITS

Feb. 3-5—Ohio State Horticultural Society annual meeting, Toledo.—C. W. Ellenwood, Sec'y, Wooster.

Feb. 10-25—Iowa Fruit and Vegetable Schools: Feb. 10 (9:30 AM-12:00 noon)—Council Bluffs (Board of Directors, Grape Growers Assn.). Feb. 10 (1:30 PM to Feb. 11, 3:30 PM)—Council Bluffs (annual fruit and vegetable meeting). Feb. 24 (10:00 AM-4:00 PM)—Burlington. Feb. 25 (10:00 AM-4:00 PM)—Davenport.—R. G. Raines, Sec'y, Des Moines.

Feb. 11-12—Idaho State Horticultural Society 59th annual meeting, Hotel Boise, Boise.—Anton S. Horn, Sec'y, Ext. Serv., Boise.

Feb. 11-13—West Virginia State Horticultural Society annual convention, Martinsburg.—Carroll R. Miller, Sec'y, Martinsburg.

Feb. 15-17—National Peach Council annual meeting, Fresno, Calif.—M. J. Dorsey, Sec'y, 1502 S. Lincoln, Urbana, Ill.

Feb. 25-26—Vermont State Horticultural Society annual fruit conference, Municipal Auditorium, Burlington.—C. Lyman Calahan, Sec'y, Burlington.

Feb. 25-26—South Carolina Horticultural Society annual meeting, City Recreation Center, Spartanburg.—Roy J. Ferree, Sec'y, Clemson.

Feb. 25-26—Vermont State Horticultural Society annual fruit conference and trade show, Municipal Auditorium, Burlington.—C. Lyman Calahan, Sec'y, Burlington.

Mar. 25-26—University of Minnesota annual Horticulture Short Course, University Farm, St. Paul.—J. D. Winter, Sec'y, Hort. Soc., Mound.

Mar. 25-Apr. 4—National Orange Show, San Bernardino, Calif. Citrus Institute Day, held in conjunction with show, Apr. 1 (tentative).

STATE NEWS

(Continued from page 27)

thermometers, he would be \$20,000 better off today.

Peach picking by consumers has been successful in Kentucky, according to Magill. When you invite people into your orchard to pick, Magill stated, you will find that they do just as good a job as you would do and that they do not damage the trees.

Magill also believes that orchards receive a sizable amount of moisture from the morning dew, especially where the tree roots are allowed to grow near the surface of the soil. Destroying feeder roots near the surface with frequent cultivation increases the water requirements of the tree, according to Magill.

Truman Nold of the National Apple Institute reported that only one-third of the people buy apples with sufficient regularity to be considered regular apple customers. Nold is convinced it should not be too difficult a job to sell more people on using apples regularly.

FLORIDA—Two hundred citrus growers and others interested in citrus are attending the West Coast Citrus School in Tampa every week. Each Tuesday evening they gather in the agricultural auditorium of the Hillsborough County Court House to hear a scientist or other authority discuss citrus soils, fertilizers, pesticides, varieties, and rootstocks or some other phase of citrus production. Lecturers are staff members of the College of Agriculture, extension service, and Citrus Experiment Station of the University of Florida, USDA, and State Plant Board.

The "students" receive copies of all lectures, and those who attend regularly will be given a certificate of attendance at the end of the school. The lectures began January 5 and will run through April 20. Registration fee is \$7.50 per student.

The school—the first to be held in Florida's West Coast section (others have been held in the Indian River and central Florida sections)—is being conducted by the agricultural extension service. It is sponsored by the greater Tampa Chamber of Commerce and a number of spray chemical, fertilizer, and farm supply companies.

The State Chamber of Commerce is pushing an "Eat More Citrus" campaign this month

Work Safely! Wear A Respirator!

Every agricultural worker exposed to toxic insecticides such as Parathion, TEPP, Systox, Aldrin, Toxaphene, BHC, Chlordane, etc., should wear a respirator. Some of these are almost odorless—others are nauseating—ALL ARE TOXIC!

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among Florida residents and visitors. The Florida Chain Store Council also is sponsoring a state "Favorite Citrus Recipe" contest during February. — *Clyde Beale, Gainesville.*

OHIO—The great need for orchards this winter is precipitation. Deficient moisture in 1953 has resulted in conditions which are precarious for both tree growth and water for spraying.—*C. W. Ellenwood, Sec'y, Wooster.*

WASHINGTON—Some 1,200 fruit growers attended the busy three-day session of the 49th annual convention of the Washington State Horticultural Association recently held at Wenatchee.

Apple scab has become quite prevalent in the area and growers at the meeting were advised by Dr. Roderick Sprague of the Tree Fruit Experiment Station at Wenatchee to try spraying while waiting for a dry season to come along which will reduce the number of sprays necessary to control the disease. He suggested a series of five sprays starting with the pre-pink application. The plant pathologist stated that Captan, ferbam, zerlate, and Crag 341 have proved effective under various conditions, with lime sulfur also a part of the early spray program.

Jesse R. Kienholz of the USDA at Hood River, Ore., told growers ferbam is the standard spray for scab in the Hood River area. Prevention of primary infections is the main object in successful control, according to Kienholz.

Washington canning Bartlett pear growers were urged by Jack Z. Anderson of San Juan Bautista, Calif., to form a bargaining association similar to that operating in his state. A resolution voting encouragement to such action by Washington Bartlett pear growers was adopted.

The growers also went on record as favoring continuance of a report on weekly movement of apples for a representative number of major U. S. markets. Formation of the Fred L. Overly Memorial Fund to raise money for construction of a new research laboratory at the Tree Fruit Experiment Station was also covered in a resolution.

A panel on bee poisoning by toxic sprays made recommendations that DDT and parathion should be applied before fruit blossoms are open; that where bees are working, adjacent orchards should be sprayed only when there is no danger of wind drifting the sprays onto the bees; and that beekeepers should not stockpile bees closer to orchards than one to three miles.

TENNESSEE—At their convention in Nashville in December the Tennessee State Horticultural Society elected Dr. Brooks D. Drain, horticulturist of the University of Tennessee Experiment Station, Knoxville, president for 1954. It was voted to hold the next annual

(Continued on page 52)



Wenatchee Daily World

Snapped at the concluding sessions of the 49th annual convention of Washington State Horticultural Association at Wenatchee were, from left: Dr. John C. Snyder of Pullman, secretary-treasurer; Elton Gilbert, grower and shipper of Yakima, who was elected president for 1954; Grady Auvil of Orondo, retiring president; and Nelson Taylor of Wenatchee, first vice-president. Walter Martin of Wapato was named second vice-president.

FEBRUARY, 1954

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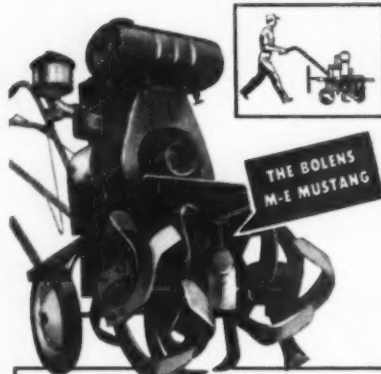
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STATE NEWS

(Continued from page 51)

convention in Knoxville. It will be the first convention of the society in Knoxville since 1943.

Interest in new plantings and in orchard irrigation was quite evident at the meeting. C. L. Burkholder, horticulturist at Purdue University, Lafayette, Ind., forcefully presented the immediate need for new tree-fruit plantings and the means for making these plantings more profitable.

Dr. Drain described and discussed four new varieties of pears—Moore's, Dabney, Hoskins, and Ayres—to be introduced by the Tennessee station this year.

The J. A. Snyder family recently purchased from Walter and Gordon Plough their interest in the Columbia & Okanagan Nursery Co., Wenatchee, Wash.

The C. & O. Nursery, established in 1906, has gained national recognition for their many new fruit variety introductions which are being grown by commercial fruit growers from coast to coast. Grower-accepted varieties which they have introduced include 12 varieties of apple, four of peach, and three of apricot. Most recent introductions are the Sun-Glo apricot and the Royal Red Delicious apple.

J. A. "Bert" Snyder is general manager of C. & O. John is office manager, Bob, assistant office manager in charge of sales, and Gene is in charge of the landscape department.

E. B. Hale, soil conservation specialist of University of Tennessee extension service outlined steps necessary for proper irrigation installations and the do's and don'ts of irrigation were threshed out at a lively round table. More than 500 irrigation systems were operating in 1953 and four growers present at the meeting plan new installations for '54.—A. N. Pratt, Sec'y, Nashville.

ILLINOIS—Curt Eckert, well-known grower operating orchards at Belleville and Carbondale under the name of Eckert Orchard Association, was elected president of the Illinois State Horticultural Society and the Illinois Fruit Council at the recent annual meetings of these organizations held in Springfield.

Other officers elected during the three-day session which attracted some 300 growers include Frank Chatten, Quincy, first vice-president; Paul Mallinson, Geneseo, second vice-president; and Harold J. Hartley, Carbondale, secretary-treasurer.

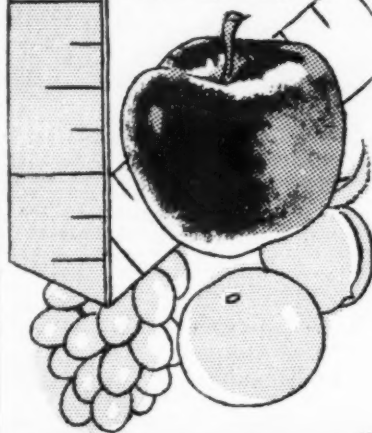
Dr. H. W. Anderson, who is completing his work at the University of Illinois this year and who this year will also have completed a half century of service to the fruit industry, was honored at the annual meeting. Illinois fruit growers have been greatly benefited by Dr. Anderson's work, especially his work in fruit diseases.—Harold J. Hartley, Sec'y, Carbondale.

OREGON—Agriculture's current economic instability is due to farm supplies outrunning demand at favorable prices, members of Oregon State Horticultural Society were told at the 68th annual meeting recently held at Corvallis. More than 400 growers, processors, and others interested attended the meeting.

The instability of agriculture is resulting in farm prices and incomes dropping to the lowest level in several years, Burton Wood, head of agricultural economics at Oregon State College, said. Crop acres have changed little in the last 40 years but farmers' ability to produce crops and livestock from these acres has made tremendous growth, Wood pointed out.

"The real answer," according to Wood, "lies not only in meeting agriculture's problems, but also those of every other economic group in this country." He warned that the inter-

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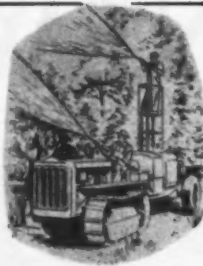
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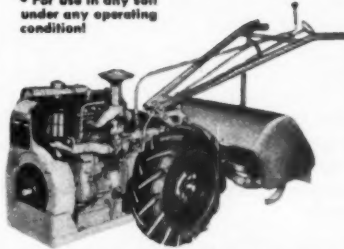


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dependence of agriculture and other groups such as labor, consumers, and business should "never be forgotten."

"A sound loan seldom gets a borrower into trouble, while an ambitious salesman can ruin your credit rating in a very short time," Ernest Henry, president, Production-Credit Corporation, Spokane, told the growers.

Credit which will liquidate itself from earnings and not from the sale of collateral is the only sound credit, Henry continued, adding that while it is not too long ago since it was difficult for fruit growers to receive loans, this is no longer so. There is no real problem at present in financing the sound operator with a sound plant. He referred to collateral lending in short-term credit as "dangerous to both lender and borrower."

James Marshall, entomologist, Canadian Department of Agriculture, Summerland, B. C., and Arthur E. Mitchell, horticulturist, Michigan State College, East Lansing, brought growers up-to-date on concentrate spraying as it is developing in the Northwest and Midwest.

David B. Lowry, Medford, was elected president of the society. Vice-presidents are Harold J. Bushue, Boring; Gordon Walker, Independence; and Ross Hukari, Hood River. C. O. Rawlings, Corvallis, was retained as secretary-treasurer.—*Harold and Lillie Larsen.*

MISSOURI—The 96th annual meeting of the Missouri State Horticultural Society was held in Columbia on January 4-5 with an attendance of 150 growers. Great interest was shown in the discussion of "Irrigation of Apple Orchards" by Fred Vollenweider of C. Vollenweider & Sons, Seymour, who used three deep well irrigating systems in 1953 and are installing a fourth well and system.

A display of new apple strains and varieties was also closely studied by many growers. Of special interest were the various bud sports of Delicious. Spray practices, chemical thinning, and the use of antibiotics for control of fire blight made up the balance of the three-session program. A tour of the new experimental horticultural farm concluded the meeting. The annual dinner program was in charge of the commercial men.—*W. R. Martin, Jr., Sec'y, Columbia.*

IDAHO—February 11 and 12 are the dates of the 59th annual meeting of Idaho State Horticultural Society. Headquarters: Hotel Boise, Boise.

Apple promotion, orchard fertilization, grape growing in the Boise Valley, and recent advances in the processing of prunes and other fruits are subjects which will be covered by such Washington state authorities as Reuben Benz of Yakima; Dr. L. P. Batjer of USDA, Wenatchee; Dr. John C. Snyder of Washington State College; and A. M. Neubert of U. S. Fruit and Vegetable Production Laboratory, Prosser. University of Idaho specialists will also take part in the program.

Two films—"Gateway to Health" and "Market Place, USA"—will be features of the two-day meeting. Some new apple varieties as well as some new Italian prune juice powders and several nectars developed by the USDA will be exhibited. The Crystal Ballroom will be the setting for the dinner and dance.—*Anton S. Horn, Sec'y, Boise.*

INDIANA—Moisture is needed in Indiana soils, especially in the southern third of the state. Normal rainfall in 1954 will not be sufficient for many of our orchards.

There is some interest in new plantings of apple and peach. Nursery stock of desired varieties is short.

John Napier Dyer, 76, retired farmer and orchardist of Vincennes, died unexpectedly January 3. For many years Mr. Dyer was an extensive grower of peaches and apples, operating the McKenney Farms. He formerly served as president of the National Horticultural Council and of the Knox County Horticultural Society and the Indiana Horticultural Society.—*R. L. Klackle, Sec'y, West Lafayette.*

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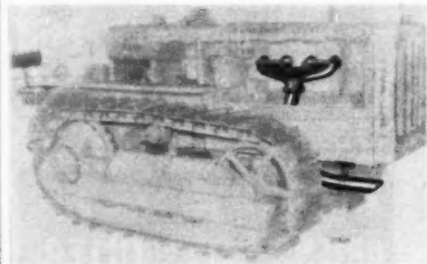
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For the Orchardist



Caterpillar has made some changes that will make tractors more suitable for orchard work. The seat has been lowered to help eliminate danger of low branches, the new exhaust system does away with the old smoke stack type, and a set of lights ideal for night spraying has been added. These items can be purchased separately and are designed to fit your present Caterpillar. Write Bob Culshaw, Caterpillar Tractor Company, Dept. AFG-154, Peoria, Ill., for details.

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Many growers who are prepackaging are having remarkable success with wire ties. One grower reports he can do the job of closing his fruit and vegetable bags more securely, as easily, and almost as fast as a grower with automatic equipment. Wire

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ties come in standard lengths to fit your requirements, and with Rapimatic tying tools, shown in accompanying photo, the job can be done quickly. Why not write Harry Smith, American Wire Tie Company, Box 72, Gowanda, N. Y., for particulars?

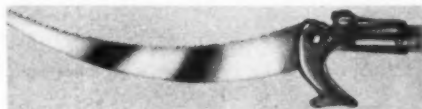


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The new aluminum head on the Seymour Smith pole pruner has a large hook on it which moves branches towards or away from you so that the cut can be made more easily. A paint brush holder is also incorporated so that cut wounds can be painted. Write Justin Smith, Seymour Smith & Son, Inc., 41001 Main St., Oakville, Conn.

Barkley Red Rome



Grower and horticulturist George L. Barkley has just introduced a new apple variety called Red Rome, a sport of Rome Beauty. It is an excellent keeper and colors more than Rome Beauty. If you would like to plant a few trees this spring, write Peter Van Well, Van Well Nursery, Wenatchee, Wash.

FEBRUARY, 1954

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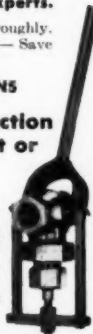
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The ORCHARD

This month we are featuring cakes made with fruit. Bake these cakes in round cake layer pans and frost with a thin butter icing, seven minute, or one of your choice. Or, bake them in a long cake pan and sprinkle with confectioners sugar. They will make a hit with friends and family!

FROZEN APRICOT SHORTCAKE

1 cup dried apricots
2½ cups water
¼ cup granulated sugar
1 teaspoon gelatin
1 tablespoon cold water
1 egg, beaten
¼ cup granulated sugar
1 teaspoon vanilla
1 cup whipping cream
Sponge cake

Boil apricots in water until very soft, about 25 minutes. Add sugar, allow to come to a good boil, remove from fire, and beat to a pulp. Soften gelatin in cold water and dissolve in hot apricots. Cool. Beat egg very light, add sugar, vanilla, and beat again. Whip cream and blend with egg. Arrange a layer of sponge cake, cut about ¼-inch thick, in bottom of refrigerator pan. Spread with apricots and cover with whipped mixture. Freeze, but not too hard. Cut in squares and serve cream side up. Serves 6.

CHERRY SPICE CAKE

1½ cups brown sugar
½ cup shortening
2 eggs
2¼ cups sifted flour
½ teaspoon baking soda
2 teaspoons baking powder
1 teaspoon nutmeg
½ teaspoon cloves
1 teaspoon cinnamon
½ teaspoon salt
¾ cup sour milk
1¾ cup cherries

Cream shortening and add sugar gradually. Mix until light and fluffy. Add unbeaten eggs and beat until mixture is smooth and well blended. Sift flour once, measure, then add spices, baking powder, salt, and soda; and sift three times. Add flour and milk alternately in three portions. Heat cherries in juice, adding ½ cup sugar. Bring to boiling point. Drain and add to batter. Bake in moderate oven, 350° F., for 30 minutes or until done. Serve with whipped cream.—Christena Smith, Tahlequah, Okla.

FIESTA PEACH GLAZE CAKE

¼ cup butter, melted
½ cup brown sugar
6 canned peach halves, well drained
6 walnut halves
1½ cups sifted enriched flour
¾ cup sugar
1½ teaspoons baking powder
½ teaspoon salt
½ cup shortening
1 egg
1 teaspoon almond extract

Combine butter and sugar and spread over bottom of 9-inch round cake pan. Place peaches and walnuts over sugar and butter mixture. Sift dry ingredients and combine with remaining ingredients. Pour batter over peaches and bake in a moderate oven, 350° F., for 60 minutes. Let cake stand in pan for three minutes before inverting on serving plate. Serve warm with whipped cream. Makes 6 servings.—Mrs. Charles Coffman, Timberville, Va.

AMERICAN FRUIT GROWER

HOME

APPLE PECAN CAKE

1/4 cup shortening
 1 cup white sugar
 1/2 cup brown sugar
 2 eggs, beaten
 2 1/2 cups flour
 1 teaspoon baking powder
 1 teaspoon soda
 1 teaspoon salt
 1 cup pared shredded raw apples
 1 cup milk

Topping

1/2 cup broken pecan meats
 2 tablespoons brown sugar

Cream shortening, adding sugar gradually. Blend in well-beaten eggs. Sift flour, baking powder, salt, and soda together and add to creamed mixture alternately with milk. Fold in chopped apples. Pour into a well greased 9-inch square cake pan and sprinkle with pecans and brown sugar. Bake at 350° F. about 50 minutes.

LEMON CREAM CAKE

1 cup heavy cream
 3 egg whites
 3 tablespoons lemon juice
 Water
 1 teaspoon grated lemon peel
 2 cups sifted cake flour
 1 1/2 cups sugar
 3 teaspoons baking powder
 1/2 teaspoon salt

Whip cream until stiff. Beat egg whites until stiff, but not dry, and fold into whipped cream. Pour 3 tablespoons lemon juice into measuring cup and fill to the 1/2-cup mark with water. Add to cream and egg mixture along with grated peel. Sift together four times flour, sugar, baking powder, and salt, and fold into first mixture. Bake in two 9-inch layer pans in moderate oven, 350° F., about 40 minutes. Cool and put layers together and fill and frost with following frosting:

Ever-Creamy Filling and Frosting

1 tablespoon gelatin
 4 tablespoons cold water
 6 tablespoons heated orange juice
 2 tablespoons melted butter
 Confectioner's sugar (about 2 3/4 cups)
 1 teaspoon grated lemon peel

Soften gelatin in cold water and dissolve in hot orange juice. Add butter. Stir in sugar until mixture is of right consistency to spread. Add grated lemon peel. Spread on cake.

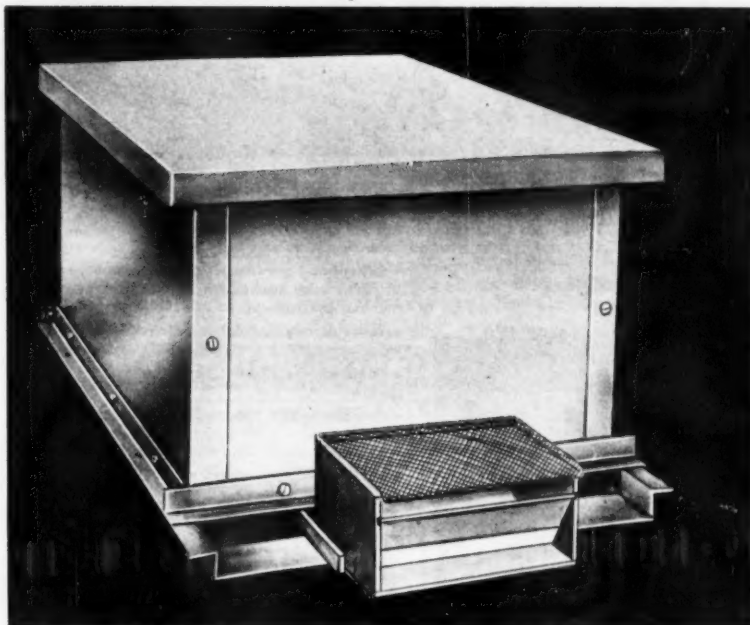
HONEY APPLESAUCE CAKE

2 1/4 cups sifted flour
 1 teaspoon baking soda
 1/2 teaspoon salt
 1 teaspoon cinnamon
 1/2 teaspoon cloves
 1 cup raisins
 1 cup broken nut meats
 1/2 cup shortening
 1 cup honey
 1 egg, well beaten
 1 cup thick unsweetened applesauce

Sift two cups of the flour with salt, soda, and spices; mix remaining 1/4 cup flour with raisins and nut meats, and add to dry ingredients. Cream shortening with honey until fluffy; add egg and beat thoroughly. Add portions of dry ingredients and applesauce to creamed mixture alternately, mixing and beating thoroughly after each addition. Bake in greased loaf pan, large, 50 to 60 minutes in slow oven, 300° F.

FEBRUARY, 1954

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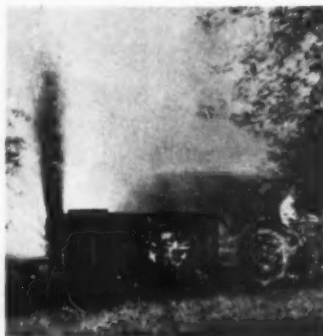
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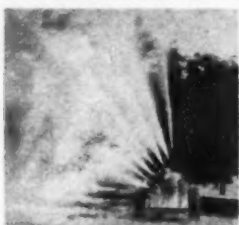
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Above—Side view of HALE Sprayer showing both banks of guns in action.



Above—View of HALE Sprayer spraying walnut trees.

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- The Centrifugal Pump has fewer moving parts, reducing maintenance to a minimum.
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APPLE SCAB

(Continued from page 19)

orchards were 25 or more years in age and were bearing good crops of fruit.

For the spray work a Hurst Aqua-Jet blower was mounted on a Bean sprayer equipped with a 55-gallon per minute pump. This was used for a normal spray dilution and a 2x concentrate mist spray. A Niagara Liqui-Duster, 1952 model, was used for a 4x concentrate spray. A Niagara Cyclone Liqui-Duster, 1948 model, equipped with a fishtail fan outlet, was used for an 8x concentrate mist spray.

When the two dust machines were used for concentrate spraying the dust hopper was completely cleaned out so that no dust was included with the spray. For dusting, both Niagara dusters were used at various times and since all dusting was done in the rain the liquid phase was shut off during each dust application.

An equal number of dust and spray applications were made. Applications were made when it was considered that primary scab could cause infection—eight in 1952 and seven in 1953.

Excellent Control

Scab control was excellent throughout the period of the study. Some of the data obtained are presented in the accompanying table. The scab control shown for the various treatments does not differ enough to indicate any one treatment to be better than another. The rather high percentage of fruit russet obtained in 1953 with the 8x concentration is probably due to having made one late cover application when the summer temperatures were quite high during a lengthy dry spell.

Control of apple scab with different concentrations of mild sulfur spray and with sulfur dust when applied during rainy periods when primary scab infection was possible.

Treatment	Year	Gal. or lb. used	% fruit russet	% leaf scab	% fruit scab
Normal spray dilution.....	1952	10.3	0.2	0.4	0.5
	1953	10.1	1.6	0.5	0.6
2x.....	1952	5.1	0.3	0.7	0.5
	1953	3.0	0.2	0.4	0.3
4x.....	1952	1.8	1.7	0.0	0.0
	1953	2.1	10.8	0.0	0.0
Dust.....	1952	1.7	0.0	0.0	0.0
	1953	1.4	0.3	0.3	0.1
None (check).....	1952	0	0.0	71.0	99.7
	1953	0	1.6	92.0	100.0

Naturally there was considerable difference in the time required for an individual application, the normal spray dilution treatment requiring the most time and the 8x and dust applications requiring the least. However, all applications were made shortly after each rainy period began and it is thought that the time lag between the beginning of the rainy period and the time of fungicide application was not long enough to permit infection on the unprotected foliage.

Throughout the course of the study

AMERICAN FRUIT GROWER

the various spray and dust machines used performed satisfactorily and adequate coverage of the trees was obtained. Some difficulty was experienced with the Bean sprayer on which the Aqua-Jet was mounted. This machine was used because it was the only sprayer available for the work but it was much heavier and had much more capacity than was desired. The machine frequently became mired in the mud, but any single application was completed within a four-hour interval and this evidently was short enough to permit good scab control. No such difficulty was experienced with the Liqui-Dusters used regardless of whether they contained dust or concentrate spray. The spray pattern of the 1952 model duster was superior to that of the 1948 model and permitted better coverage on taller trees.

A considerable number of Maine fruit growers are now using concentrate mist spray in their scab control program. Most growers are using either a 2x or 8x concentration, although occasionally some growers are using about a 10x concentration. As a result of these studies and the observations made in commercial orchards, it is concluded that applications of concentrate mist spray of suitable materials control scab satisfactorily even when the critical applications are made during rainy periods.

THE END

APPLE BLACK ROT

(Continued from page 27)

The majority of black rot infections on the fruit occur through insect punctures and other injuries, or through cracks as the fruit is approaching maturity. Black rot on the fruit, therefore, cannot be controlled by spraying.

On the fruit black rot and bitter rot are sometimes confused; but the firm, solid rot caused by the black rot fungus and the lack of spore masses on the surface are two features that clearly distinguish black rot from bitter rot.

The bark of dead apple branches and twigs are rapidly invaded by the black rot fungus. Branches killed by the fire blight organism seem to be particularly suited to the growth of the fungus. The fungus produces two types of spore structures on the bark and the numerous spores produced in them cause the leaf and fruit infections.

Control. Outbreaks of black rot are favored by rainy weather but can become severe only if there is an abundance of dead wood in the trees. The first and most important step in reducing the loss of fruit from black rot, therefore, is to remove all the dead wood, especially the twigs killed by fire blight, during the fall and winter.

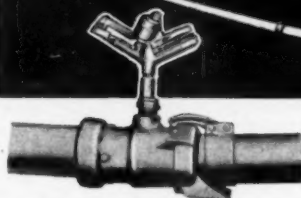
Since the black rot fungus attacks a great variety of woody plants, orchards adjacent to woods may still be infected to a limited extent by spores from dead branches in nearby native trees; but these infections are not likely to be so numerous as those from spores produced on dead twigs and branches in the apple trees.

The spray materials used and the program followed for the control of apple scab will prevent the development of a serious outbreak of frog-eye leaf spot provided the dead wood has been removed from the trees. In short, while spraying will help control the leaf spot phase, the removal of dead wood is essential to prevent fruit infections and to augment the protective effect of the sprays on leaves.—John C. Dunagan, USDA.

FEBRUARY, 1954



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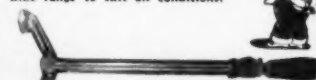
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Established 1880

156 Maple St., Danville, N. Y.

NEW GRAPES

New disease resistant hardy grapes. Also new SEEDLESS. No spraying, delicious quality. Every home owner can grow them easily. Dwarf fruit trees, berries, nut trees. Small fruits. Guaranteed stock. Catalog free.

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RUPTURE!

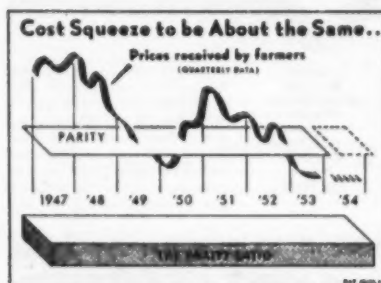
An amazing Air-Cushion invention allows body freedom at work or play. Light, neat, cool, sanitary. Durable, cheap. Day and night protection helps Nature support weakened muscles gently but surely. No risk. **Send on Trial!** Write NOW for free Booklet and **Proof of Results**. All correspondence confidential.

Brooks Company, 383-A State St., Marshall, Mich.

• Fruit for Health •

Our Parity Ratio Remains High

THE difference in price received by farmers and price paid is known as parity ratio. Most agricultural commodities declined in price received causing a general drop in parity ratio. Fruit prices received by growers, however, actually rose, from an average in 1952 of 195 to 216 in 1953, resulting in little change in parity ratio for fruit growers. This means that of all farmers fruit growers were more fortunate in the matter of price received but less fortunate in production as the 1953 crop was relatively small.

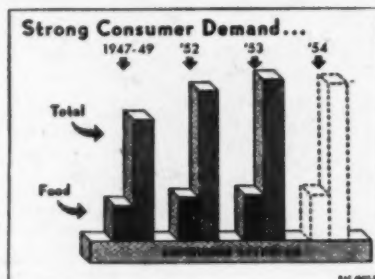


The 1954 Fruit Outlook

THE Bureau of Agricultural Economics has surveyed the 1954 fruit situation and has issued an encouraging report which summarizes as follows:

"With little change in demand for fruit expected in 1954, weather and yields are likely to determine the direction of price changes. With average weather, the 1954 deciduous crop is likely to be moderately larger than the relatively small 1952 and 1953 crops and some further increase in citrus production seems probable. Production of tree nuts, if weather is average, is likely to be smaller and prices may be higher, especially for pecans and almonds.

"No marked change is in prospect for total exports of fruit in 1954. Although



the dollar exchange situation has improved in some Western European countries that have been historically important markets for fresh and dried deciduous fruits, dollar exchange continues limited for the importation of United States fruit. With production larger and an export-payment program in operation, exports of winter pears probably will be greater than in 1953. Exports of apples may exceed 1953 since production of export varieties and sizes is larger. But exports of raisins are expected to be smaller because of reduced production in 1953. Exports of raisins again will be assisted by an export-payment program. Exports of citrus to Canada are expected to continue large and may even increase further. But, total exports of citrus may not be greatly different from the relatively large volume exported in 1953."

Fruit Growing is Such Fun!



Fruit Talk

Women buy "convenience" food products (prepackaged, prepared, ready for use) says a courageous writer because they are 1) **lazy** and seek laborsaving devices; 2) **selfish** and seek the best for their families; 3) **stingy** and demand value; and 4) **jealous** and guard the health and physical welfare of the family!

"Accent," which is pure monosodium glutamate, possesses the unique property of bringing out full flavor in food without adding any flavor of its own and is being recommended as a standard part of the procedure for packing frozen and precooked foods.

Dr. R. F. Carlson of Michigan State College has shown that **excessive runner formation** which tends to choke strawberry plantings can be reduced by certain chemicals, such as DCU, PE-TCA, and 2,4-D.

The **castor bean**, frequently used as an ornamental, is being planted to furnish castor oil for the manufacture of **synthetic rubber**.

The **British Government** has given notice to foreign countries that it intends to increase the **import duty** on a large range of horticultural products.

For those interested in color, the **American Horticultural Council**, Bailey Hortorium, Ithaca, N.Y., has published a "Flower Color Detector" chart for a modest fee which is the simplest and most useful thing of its kind available—not, however, adapted to fruits and vegetables.

Copper deficiency of fruit trees has been found on the sandy soils of southern England. It is corrected by copper sulfate applied to the soil at the rate of a half pound per tree, by 4 per cent dormant sprays, by .05 per cent foliage sprays, and by branch or trunk injections.

Ninety-five per cent of the acreage of California's 25-million-dollar strawberry industry is based on varieties originated by the **California Agricultural Experiment Station**.

The **rabbit disease** which has caused so much lamentation among **French sportsmen** and rabbit fanciers has arrived in **England**. It has already caused a substantial reduction in the rabbit population of **Australia**. Many **American fruit growers** will accept this new virus trouble of rabbits with distinct approval.

Dr. E. M. Hildebrand of Texas has presented a 38-page report on virus diseases of fruits (USDA's *Plant Reporter*) which deals mostly with **stone fruits** and which is worth careful perusal.

"Cities are man-made **deserts of stone**. Too many people have lost the feeling of belonging. They have attempted to be sufficient unto themselves. This leaves them very lonely, lacking in **humility** and **compassion** and ripe for the breeding of **jealousy** and **greed**. Horticulture and gardening are great antidotes for this, generating a chain reaction of good will."

—H. B. T.

Coming Next Month

- Trace Mineral Deficiencies
- Foliar Sprays
- New Ideas in Mechanization
- A New Deer Repellent
- Fertilizing Fruit Trees

AMERICAN FRUIT GROWER

B.F. Goodrich

Power-Grip Tractor Tire will do a great traction job for you, too!



It looks bigger—it is bigger!

It's the powerful, new B. F. Goodrich Power-Grip tractor tire, built to do a great job of traction. Knife-action cleats bite easily into the soil, take a firm, non-slip hold. Full traction in forward or reverse is the result, even in rough going. Power-Grip cleats are higher at the shoulders for deeper penetration, greater drawbar-pull. You can keep on schedule in any kind of going. You'll cover more ground in less time.



Bigger shoulders!

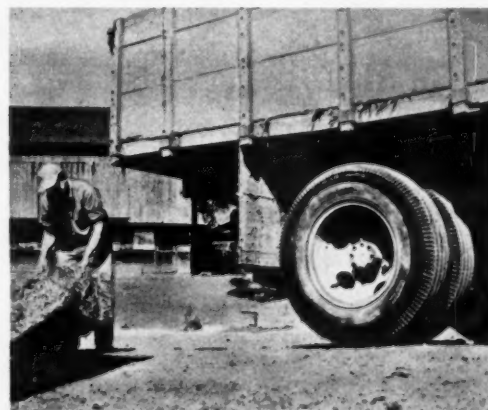
The bigger Power-Grip shoulders are reinforced at the base to give them extra support. They stand rigid even on hard surfaces. They bite into the soil without bending. And the shoulders are square cut to defy slippage. Every turn of a B. F. Goodrich Power-Grip tire counts for maximum traction. Dirt falls from the open-center tread and open channels as the tire rolls. Power-Grip tires stay clean, and only clean tires can give you full traction.

The B. F. Goodrich Power-Grip is the biggest tractor tire value on the market today. It's the tire that comes on new tractors.



Bigger cleats!

You get more tire, more working power for your money with the big B. F. Goodrich Power-Grip tire. The cleats have a bigger face area to press against the soil, pull you through faster. Count the cleats on leading makes. Time after time you'll find that size for size, the BFG tire has more cleats. And no other tire is wider than Power-Grip! A big, broad tread with extra cleats means greater power for you.



Wonder Tread truck tire!

That's what users call the BFG Heavy Duty Express truck tire. The tread is flat and compressed, will give you bonus miles of service at no extra cost. See your B. F. Goodrich retailer. He has tires for every farm need. The address is listed under Tires in the Yellow Pages of the phone book. Or write The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.



Malathion^{*} gives you all 4

1. High insect toxicity
2. Low mammalian toxicity
3. Compatibility
4. Quickly disappearing residues

After years of testing by state and federal authorities and actual grower use, malathion has been called "the most promising new insecticide."

Here's why:

Extremely effective against aphids and mites as well as many other insect pests on a wide variety of crops.

Much more toxic to insects than to mammals. The USDA calls it "one of the safest insecticides to handle." Necessary precautions for safe handling similar to those for DDT.

Compatible in spray tank with most other spray materials.

Residues on crops disappear quickly. On most crops malathion residues are less than 1.0 part per million ten days after last application.

Spider mites and aphids on strawberries

New Jersey strawberry growers have had excellent control of spider mites and aphids, using 1½ pints of malathion 50% emulsion per acre.

Malathion is another product of American Cyanamid research, designed to help you farm more profitably, more easily.



Write for
MALATHION
GROWER'S HANDBOOK

MALATHION insecticides are available from well known manufacturers. Consult your local agricultural authorities for suggestions on dosages and application procedures.

^{*}Also known as MALATHON



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